Operating Instructions
Optimat SBE 109 K

Created: Schreiber

Date: 02/04/25

Version 1

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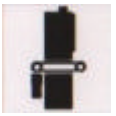
The operating instructions should always be kept near.

The machine operator should know the contents of the operating instructions and how they have to operate the machine

The operating instructions contain 10 sections:

1: Product description

Information on installation and function of the machine.
Technical data
Declaration of Conformity



2: Safety regulations

General Safety Advice,
Safety Recommendations.

3: Transport / Installation

Information on transport, installation and location of machine.

4:Commissioning

Information on connection of machine, power, compressed air and dust extraction.

5:Components

Description of sanding head.
Description of feed device.

6: Operation

Description of operating elements

Start and Stop
Changing the abrasive belt
Changing the sanding Insert

7: Adjustments

Abrasive belt oscillation
Tensioning and setting of conveyorbelt
Tensioning / changing of V-belt
Setting up of thickness adjustment
Dressing of sanding insert

8: Care and maintenance

Lubrication instructions.
Cleaning and Maintenance.

9: Faults

Problem solving.
Description of faults.

10: Appendix

Floorplan,
Electrical and Pneumatic Drawings
Spare parts lists and drawings.

Symbol for General Information

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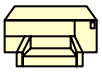
Fax		**Fax** (Sales) **02521 / 842-67** **Fax** (Service) **842-83**
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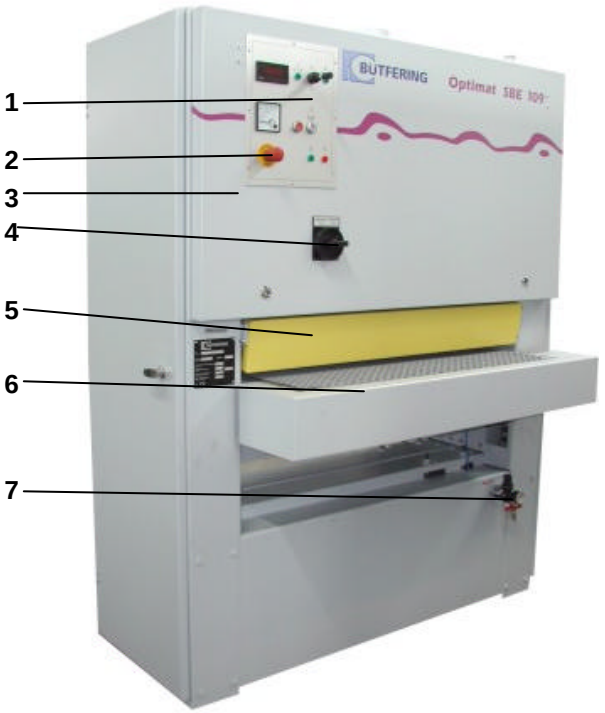
1.Basic Machine

1.1 Construction

The Basic Machine, type SBE 109 consits of machine frame, feed table, pressure elements and head.

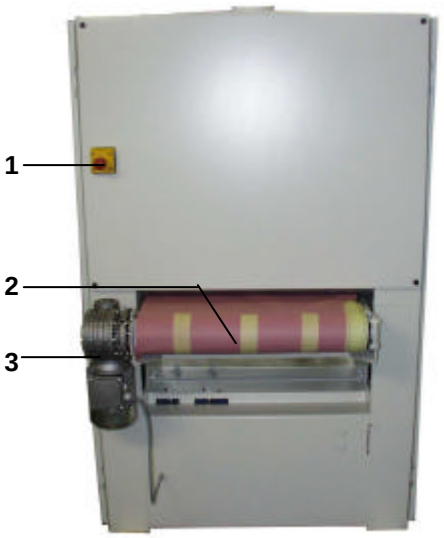
1.2 Operating Side

1	Operating table
2	Emergency switch
3	Electrical cabinet
4	Main switch
5	Safety switch rail
6	Feed table
7	Compressed air connection



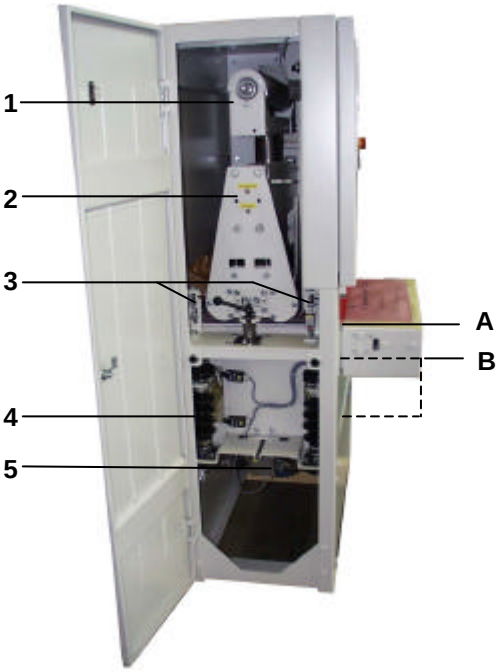
1.3 Back Side

1	Emergency switch off
2	Feed table
3	Drive, height adjustment



1.4 Belt Changing Side

1	Tensioning drum
2	Sanding head
3	Pressure rollers
4	Height adjustment
4	Drive, height adjustment

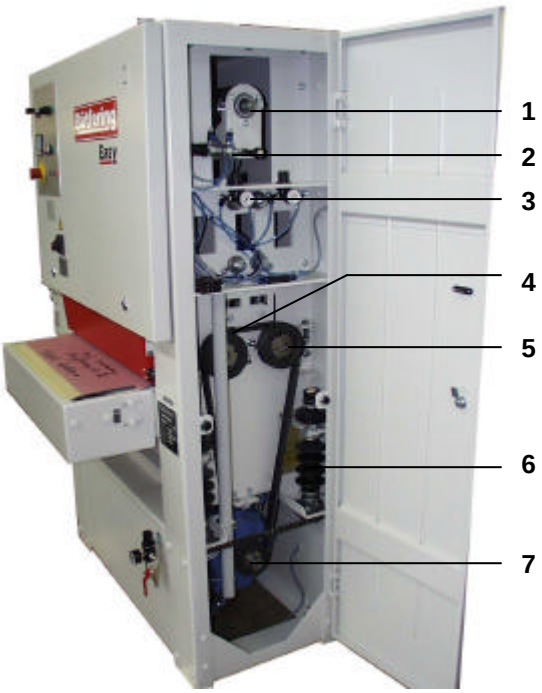


Height adjustment, feed table

- **A** min. 3 mm / 0,118 inch
- **B** max. 150 mm / 5,905 inch

1.5 Drive Side

1	Tensioning drum
2	Oscillation cylinder
3	Pressure regulator, belt tension
4	V-belt pulley, contact roller
5	V-belt pulley, idle roller
6	Height adjustment
7	Drive, sanding head



1.6 Description of Function

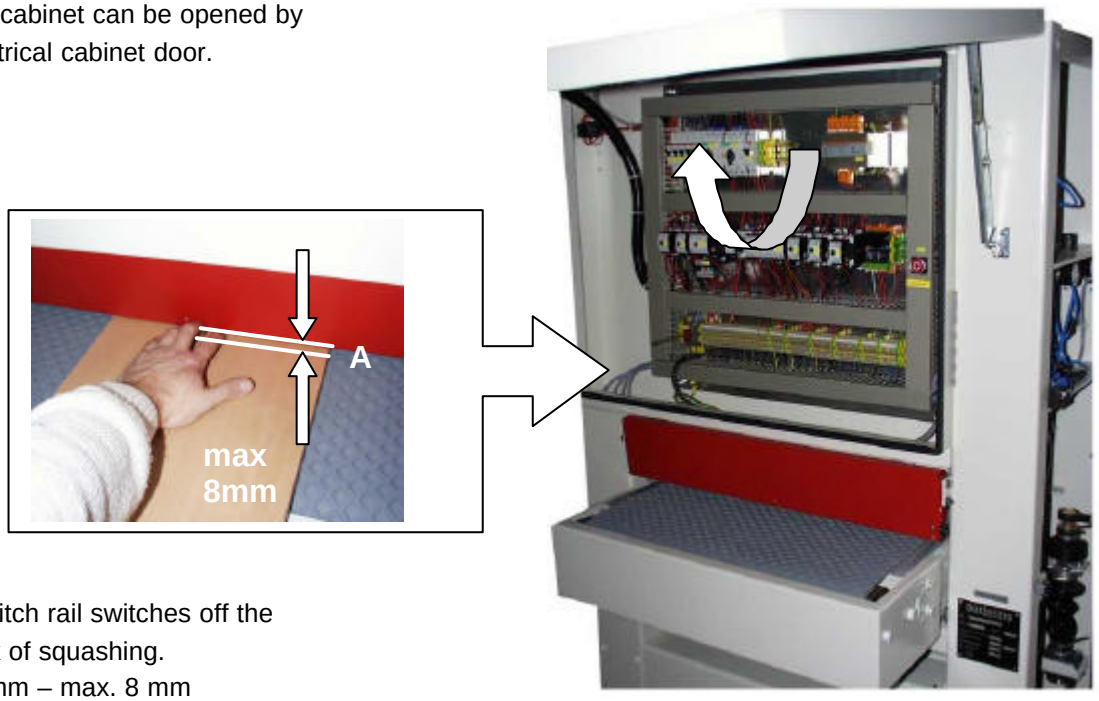
The sanding is driven by an electro-motor via V-belt drive. The workpiece thickness to be achieved, is adjusted by the height adjustment.

- Feed table is moving.

The feed table transports the workpiece through the machine.
The pressure rollers are pressing the work-piece onto the conveyorbelt during processing.
The workpiece is sanded to the adjusted workpiece thickness by the sanding head.

1.7 Electrical Cabinet

The electrical cabinet can be opened by lifting the electrical cabinet door.



The safety switch rail switches off the feed upon risk of squashing.

A min. 3 mm – max. 8 mm
0,118 inch – max. 0,315 inch

1.8 Technical Data – Wide Belt Sander Optimat SBE 109 K

- Only the executions of the corresponding Order Acknowledgements or Special Data Sheets apply for machines, which are deviating from this data sheet
- The positions marked with (Sond) are deviating from the standard execution and correspond to the special executions of the pricelist.

Workpiece dimenions				
max. sanding width		950	mm / 37.4 inch	
max. workpiece thickness		150	mm / 5,905 inch	
Working height				
min. working height		750	mm / 29,528 inch	
max. working height		900	mm / 35,433 inch	
Abrasive belt dimensions				
Abrasive belt width		970	mm / 38,189 inch	
Abrasive belt length		1900	mm / 74,803 inch	
Sanding head				
Drive capacity at 1 r.p.m.		11	KW	50Hz/400V
Drive capacity at 1 r.p.m.		12,7	KW	230V+460V/ 60Hz
or drive capacity at 1 r.p.m.	(Sond)	15	KW	50Hz/400V
or drive capacity at 1 r.p.m.	(Sond)	17,5	KW	230V+460V/ 60Hz
Abrasive belt speed		18	m/s	
Contact roller diameter		116	mm / 6,338 inch	
Conveyorbelt feed devic				
Length of conveyorbelt		2045	mm / 80,512 inch	
Width of conveyorbelt		950	mm / 34,4 inch	
Drive capacity at 2 r.p.m.		0,6 / 0,4	KW	
Feed speed		4 / 8	m/min	
Height adjustment				
Drive capacity		0,1	KW	
Dust extraction				
Air speed on outlet		mind. 20	m/s	
Machine resistance		800	Pa	
Minimum extraction quantity – abrasive belt		1100	m^3/h	
Outlet diameter		140	mm / 5,512 inch	

Recommended extraction quantity at an air speed of 20-25 m/s.	1100 -1400	m^3/h
Compressed Air		
Inner feeding diameter	8	mm / 0,315 inch
min. air pressure	6	bar
max. air pressure	8	bar
Air consumption (referring to normal atmosphere.)		
Machine control	10	L/min
Machine dimensions / Data	(See floorplan)	
Total weight (Variations in weight are possible due to execution)	approx.950	kg
Dimensions	see floorplan	
Electrical Connection Values		
Total connected load:	see wiring diagram	
Voltage	see wiring diagram	
Frequence	see wiring diagram	
Noise emission (nach DIN 45636, Teil 1663)		
In front of the machine	non-run 78,0	db(A)
	Operation 82,0	db(A)
Behind the machine	non-run 79,5	db(A)
	Operation 83,0	db(A)

Deviations up to 4 db(A) are possible by measuring and production tolerances.

1.9 EC – Declaration of Conformity

as defined by the EC Machinery Directive 98/37/EC, Appendix IIA

We hereby declare, that the production equipment

Type: SBE 109 K **#Type#**

Year of construction: 2002 **#AJ#**

Machine No.: **#MaschineNr#**

intended for the machining of wood and similar materials and designed for EC-countries corresponds, in the supplied version, to the following directives and standards:

Directives

- **EC Machinery Directive 98/37/EC, Appendix I**
- **EC Low Voltage Directive 73/23/EEC (in the Version 93/68/EEC)**
- **EEC Directive 89/336/ECC (in the Version 93/68/ECC)**

Standards

- **EMC Standard: EN 50081/82, Part 2 of each**

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Joint Managing Director

Appendix to

EC – Declaration of Conformity

as defined by the EC Machinery Directive 98/37/EC, Appendix IIA

Type: SBE 109 K **#Type#**

Year of construction: 2002 **#AJ#**

Machine No.: **#MaschineNr#**

If alternations or conversions are made to production installation (e.g. changes/updates of aggregates or controls) that are not performed by the manufacturer or by a company authorised in writing, the EC-conformity expires.

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Safety Regulations

for the designated use of

HOMAG Group Machines

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These safety regulations

- **contain important information for the safe operation of HOMAG Group Machines**
- **apply to all components of the machines**
- **describe the sometimes apparent, sometimes hidden risks associated with the machines**

Read and apply these **safety regulations** before carrying out the following work:

- Transportation
- Installation
- Starting
- Operation, including
  - Programming
  - Tooling
  - Trouble-shooting
  - Clearing away production waste
  - Disposal of operating and auxiliary materials
  - Cleaning
  - Inspection
- Maintenance

Any person who experiences difficulties with reading or understanding must receive special training from the operating body of the production equipment.

All persons entrusted with work on the production equipment must confirm the following by signing:

I have read and understood all parts of the Operating Manual, particularly the Safety Regulations.

Read and understood

Name	Date

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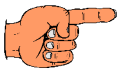
1 Basics

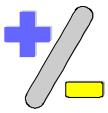
1.1 Symbols used



Note:
Notes on application or use

Caution:
Precautions for preventing material damage.

Danger:
Hazard warning to prevent personal injury and/or extensive material damage.



Optional:

Devices available depending on the particular version of the machine.

Subject to change

Hazard warning signs:
to U.S. ANSI Z535 Standard

1.2 Definitions

The following conditions apply within the context of these Safety Regulations and the Operating Manual:

Auxiliary and operating materials	• Oils • Lubricants • Separating agent • Adhesive • Glues • Solvents • Cleaning agents
	• Paints • Anti-freeze
Cleaning	Cleaning and/or removal of the following materials: • Production residues • Workpiece remnants • Impurities generated by auxiliary and operating materials • Dust deposits These activities are amongst the regular tasks, which the operator has to carry out.
	This cleaning work is always described in Section 3 of User Manual.
Conversion	All changes to the machine, which are not described in the Operating Manual
Emergency stop	Fastest possible shut-down of all potentially hazardous movements
External components	• Components that are not supplied by the manufacturer • Components that have functions similar to original components
Fault	Production sequence interrupted through the following events: • Lack of power • Lack of material • Lack of auxiliary and operating materials
	• Workpieces or workpiece remnants jammed or wedged • Malfunctions of machine • Incorrect operation
Feed - stop	Stop workpiece transport or feeding of processing spindle
Inspection	• Checking the reference condition of the machine • recurrent, general inspection • Examination as part of the maintenance schedule or on the basis of official regulations
Installation	Assembling the machine at the site of installation

Isolating safety devices	Examples: • Machine covers
	• Protective hoods • Protective doors • Protective enclosures
Maintenance	Examples: • Cleaning • Maintenance
Maintenance manual	Describes all tasks, which the operating body must carry out regularly in order to maintain the reference condition of the machine.
Manufacturer	• Designer and constructors of the machine • Designer and manufacturer of processing tools • Developer and manufacturer of auxiliary or operating materials and materials
Non-isolating safety devices	Examples: • Emergency stop switch • Rip cords • Access-protected mats • Light barriers
Operating behaviour	Characteristic parameters: • Noise generation • Vibration • Temperature • Dust generation in the machine
Operating body	Company/organization which owns and operates the machine.
Operating instructions	Instructions for the operating company on organizing the process within its plant
Operating Manual	• General information • Start-up instructions
	• User Manual • Maintenance instructions • Spare parts lists • Electrical circuit diagrams
Operational interruption	• All periods during which the machine is not in production and is not supervised
Operator	Operator • Person familiar enough with the machine to be capable of working with it independently.
Original components	Spare or wearing parts supplied by the manufacturer
Production area	Closed area in which machine is set-up and operated

Production equipment	Equipment: • Unit which has or which can execute individual or several functions or which are execution on the functions Unit: • Unit, which executes individual processing steps or functions • Unit, which cannot be used independently Machine: • Unit, which executes several processing steps or functions • Unit, which can be used independently Unit: • Combination of several machines which may be from various manufacturers, which jointly machine workpieces or execute functions
Production mode	• Designated use of the machine • Reference condition of machine
Qualified electricians	Person who is able to assess the assigned jobs and potential hazards based on • his professional training, knowledge in the relevant areas and experience • his familiarity with the relevant standards
Qualified personnel	Person able to assess the safe condition of the machine for operation based on: • his professional training, knowledge in the relevant areas and experience • his knowledge of the relevant national working protection regulations, accident protection regulations, directives and generally recognized rules of technology (example: Standards)
Repair	Examples: • Cleaning • Maintenance • Repair and/or sharpen
Repair work	Work that is necessary to restore the machine to the reference condition.
Retooling	• Automatic conversion to other settings • Manual conversion to other settings • Program change • Production adjustments • Work during the production operation, so that other workpieces can be processed as part of the designated use
Routine maintenance	All tasks, which are described in the Maintenance Instructions.
	Work requiring special training or special tools may only be carried out by trained and qualified personnel or by a service team.
Service team	Works customer service, distribution partner customer service or authorized service agent

Start of production	Start of designated use Start of processing
Starting	Initial operation of a production facility after setting-up, repair, conversion or maintenance This also includes: • Check programming • Perform basic settings • Refill operating materials • Fit tools
Starting instructions	• Instruction for initial start or re-start of the machine • Instruction for transporting and setting up the machine • For qualified personnel
Switch off from the power supply	• Physically isolate production equipment from power supply • Disconnect supply cables
Switching off	• Control voltage off • Control off • Compressed air off and lines depressurized • Master switch is off.
Tooling	• Fitting or changing tools • Performing manual adjustments • Setting up the clamping devices • Adapting the machine to the workpiece dimensions
Turn on	• Master switch on • Start up main computer • Control voltage on • Compressed air on • Work to prepare for the start of production
User Manual	Instructions for tasks, which the operator must carry out.

2 Designated use

The machine has been constructed according to the latest state of the art and the recognized safety rules.

However, danger may still occur during use:
- Danger to the life and limb of the user or third persons
- Danger to the machine and other physical objects

This applies predominantly if the machine is not used for its intended purpose

The machine is intended exclusively for the machining and transportation of the following materials:
- Wood
- Wood-like materials

The following must also be observed when using the machine for its intended purpose:
- All specifications and regulations in the Operating Manual and on the machine
- All generally applicable requirements and other binding safety regulations and accident prevention rules
- All regulations on environmental protection

The machine may only be operated with a functioning extraction device

Improper use

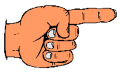
Any use other than that designated will be construed as improper use.

Examples:

- Processing of materials containing metals similar to metal or metallic materials
- Use in potentially explosive areas
- Machining of materials which create sparks, since sparks can penetrate the suction channels and cause fires.

The following are not permitted:

- Unauthorized changes to the machine or to auxiliary equipment, which are part of the specification
- Particularly changing, bridging or de-commissioning equipment, which serve active and passive security
- Installation of parts from other manufacturers



Note:
In the event of changes made on the basis of official regulations:

- Consult a Service Team
- Obtain official approval from the manufacturer

Liability

The machine may only be used if the following are guaranteed:

- Technically perfect condition
- Desginated use
- Safety awareness during use
- Risk awareness during work
- With fitted safety devices
- Under observation of the Operating Manual

Faults which may affect safety must be rectified immediately.
If necessary or in case of doubt, commission a Service Team to rectify the fault.

Danger:
The manufacturer will not accept any liability for personal injury or material damage, arising on account of the following actions:

- Non-observance of operating instructions
- Non-observance of the details on the order confirmation
- Non-observance of general and country-specific valid conditions and regulations

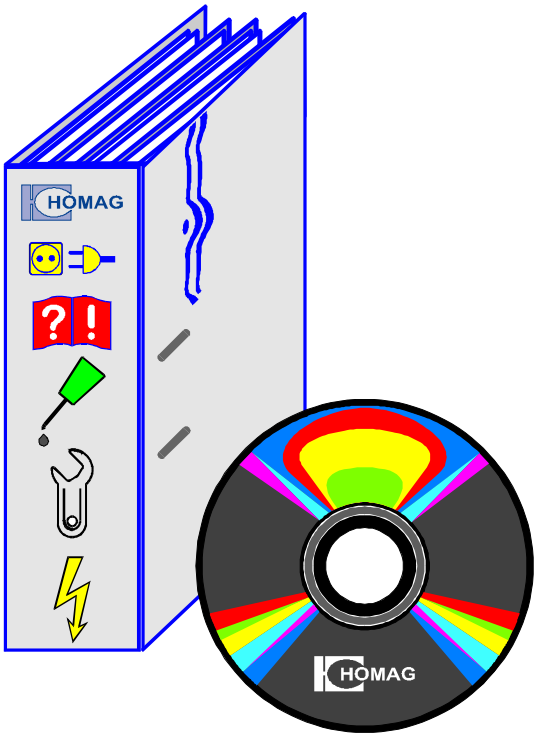
In the event of such improper use of the machine, the sole risk lies with the operating body.

3 Notes for the operating body

Always keep the Operating Manual available and accessible at the place of machine operation

Supplement the Operating Manual with:

- Accident prevention instructions for woodworking machines
- Accident prevention regulations for the country of the operating body
- Generally applicable regarding environmental protection
- Regulations on wearing personal protection gear
- Regulations on handling dangerous substances
- Operating instructions on special operating conditions
  - Work cycle
  - Work organisation
  - Personnel
  - Area of responsibility for personnel



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Check

On an irregular basis, but at least every six months, check safety devices without notice and confirm that personnel are working with safety awareness. Observe the Operating Manual and all supplementary documents.

Choice of personnel / skills

Ensure that work on and with the machine is only carried out by reliable personnel who have the relevant training, are authorized, have been commissioned for this type of work and are familiar with the local conditions or by instructed persons under the direction and supervision of a manager.
This applies not only to operation of the machine, but also to special work within the scope of its use (commissioning, maintenance) and particularly for work on hydraulics, pneumatic, electrics and software.

Training

Personnel who work on the machine must be:

- Trained
- Suitable
- Instructed
- Commissioned

Personnel must be given information on:

- Proper use of the Safety devices
- Any potential dangers
- Precautionary measures to be taken

Personnel must be trained in the function of the isolating and non-isolating safety devices.
Personnel must regularly check the isolating and non-isolating safety devices.

The manufacturer offers the following comprehensive training in this regard.

Danger:
Personnel who are being trained on the machine may only work on this machine under the constant supervision of experienced qualified personnel.

Observe the legal minimum age for machine operation.

Responsibilities

Clearly allocate responsibilities for the following activities:

- Operation
- Tooling
- Maintenance

Do not give any ambiguous safety regulations.

Personnel must be authorized to decline any ambiguous instructions.

Technical safety tests

Technical safety tests may only be carried out by qualified personnel. This concerns:

- Routine examinations
- Examinations after interruptions

4 Notes for the operator

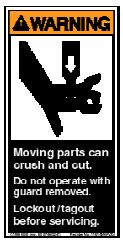
4.1 Dangers

The machine has been constructed according to the latest state of the art and the recognized safety rules.
However, risks may still arise during use:

The unavoidable dangers associated with the machine are:

Danger:
The rotating components of the feed or rotating tools may result in a
➔ **Danger of becoming trapped!**

Danger:
The moving components on the machine may result in
➔ **Danger of becoming trapped!**



Danger:
Sharp tools may result in a
➔ **Danger of being cut!**

Danger:
Hot components, units, tools or hot melt glue may result in a
➔ **Risk of burns!**

Danger:
Dangerous auxiliary and operating materials may result in a
➔ **Risk to health!**

Safety devices

Only operate the machine when all the safety and extraction devices are working properly.

Danger:
Safety devices may not be removed or de-activated!

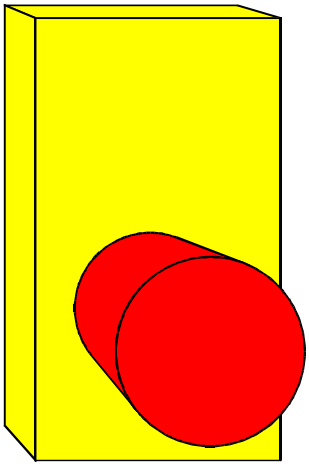
If safety devices are removed, refit and carry out a functional test immediately after completion of the work. This concerns:

- Tooling work
- Routine maintenance
- Repair work

If the machine is idle or switched off for a long time, all safety devices must be remain fitted and in proper working order.

Caution:

- Check the machine at least once per shift for externally visible damage and faults
- Report any changes, including those in operating behaviour, immediately to the department or person responsible
- Shut down and secure damaged machines immediately



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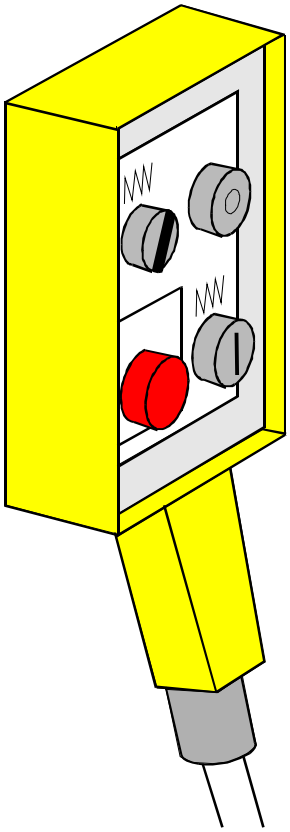

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Safe machine operation

Danger:
Make sure that no-one is in danger before switching on the machine and starting operation.

This applies for
- Production operation
- Retooling
- Adjusting safety devices
- Maintenance

For all work:
- Observe starting and User Manual

For maintenance work:
- Observe maintenance instructions

For production operation:
- Do not place objects on the machine
- Observe workpiece dimensions
  See order confirmation / specification

Danger:
The following work must not be carried out during production operation of the machine:
- Cleaning
- Maintenance
- Repair work

Danger:
- Do not reach into the feed area
- Do not look into the feed area
- Do not reach into the area near the rollers
- Do not stand near flying chips
- Do not open unsecured machine covers
- Keep well away from moving workpieces
- Keep well away from moving machine components

Danger:
Use suitable measures to prevent faults resulting from loose workpiece parts or remnants
- Completely remove parts
- Programmed stop, in order to remove parts
- Position workpiece clamping device correctly

Only release clamping devices when the feed is in a vertical position and the tool is idle.
Ensure that the outfeed area is adequate for long components.

Before leaving the machine:

- Turn off control voltage
- Turn off the master switch
- Secure master switch
- Remove key from key-operated switch
- Switch off pneumatics

Caution:
In the event of a functioning fault:
- **Emergency stop**
- Wait until all moving parts have come to a stop
- Ensure that the machine cannot be switched on again:
  - electrics
  - pneumatics
- Rectify fault
- Examine machine for damage

Notes on the machine

Observe all safety and danger signs on the machine and keep them in a legible condition.

Clothing

Danger:
Risk of injury by becoming caught or being pulled in if wearing:
- Loose clothing
- Jewelry
- Watches
- Rings
- Loose, long hair

All the above are therefore banned when working on the machine.

4.2 Personal protection gear

Use suitable officially tested protection gear.

Ear protection

Always wear ear protection when carrying out clamping work on machines.

Eye protection

Wear safety glasses:
- For tooling work
- During the setting-up operation
- When cutting tools

Safety shoes

Only wear safety shoes at the work site, never casual shoes or sandals.

Dust protection mask

Wear a dust protection mask if the set-up work requires material to be processed without extraction device.

Protective gloves

Wear protective gloves
- When handling chemicals, tools and sharp-edged workpieces
- When cleaning and handling hot components on the machine

4.3 Behaviour

- Never operate machines whilst under the influence of alcohol or drugs
- The safety of other persons may depend on your awareness and ability to react.
- Medication may delay your reactions

4.4 Danger of fire!

Due to the risk of fire and explosion caused by dust, the following are strictly forbidden throughout the entire production area:

- Naked flames
- Smoking
- Welding work
- Burning work
- Grinding work
- Isolating work

If such work has to be carried out for operational reasons:

- Cordon off the area
- Switch off the machine completely
- Clean the machine and surrounding area of dust and flammable substances
- Ensure the area is adequately ventilated
- Prepare solvent
- Organize supervisory staff

On completion of the work, organize the fire service and monitor the working area for an adequate period of time

Danger:
➔ Risk of explosion!

4.5 Auxiliary and operating materials

Always observe the manufacturer's safety regulations and data sheets relevant to these products when handling chemical substances.
Wear safety equipment!

Danger:
Exercise caution when handling hot-melt glue
➔ **Risk of burns!**

4.6 Cleaning the machine

- Switch off the machine before cleaning
- Only clean the machine with a vacuum cleaner or dry cloth
- Vacuum all machines thoroughly, especially those units that get hot, every day and after every shift
- The control cabinet should be cleaned regularly by a qualified electrician

4.7 Working area

The working area must be kept clear.

Keep the following areas clean:
- Production equipment
- Safety area
- Handles
- Steps
- Pedestals
- Platforms
- Ladders
- Floors must be even and free from:
  - Waste
  - Chips
  - Workpiece remnants
  - Oil
  - Sawdust

Do not place objects on the machine.
The working area must be adequately lit.
Keep raw materials near to the workplace.
Stack machined workpieces safely.

4.8 Raw material

Only use raw materials that contain no nails, stones or similar inclusions.

Danger:
Wood is not homogenous.
Work with care:
➔ **Risk of splitting, breaking and flying splinters!**

5 Emission values

Dust emission

Dust emission values for machines on which clamping work is carried out:

The values are less than 2mg/m^3
(see order confirmation)

Do not operate machine unless the extraction device is working properly.

If it is not possible to fully encapsulate the machine assemblies, e.g. in setup mode:
- Wear dust protection mask

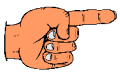
Danger:
➔ **Sawdust is damaging to health!**

Noise emissions

Values for machines with clamping operations:

Noise level	Stationary machining	Continuous machining	Panel saw
No-load	75... 85 dB(A)	80... 90 dB(A)	100 dB(A)
Machining	80... 100 dB(A)	80... 105 dB(A)	100 dB(A)
Work place-related emission values			
Workplace 1 No-load	70... 80 dB(A)	70... 80 dB(A)	80 dB(A)
Workplace 1 Machining	70... 90 dB(A)	80... 87 dB(A)	80 dB(A)
Measuring uncertainty allowance K	4 dB	4 dB	4 dB

Values for machines without clamping operations:
These values are subject to final measurement.



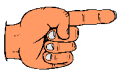
Note:
This information should enable the operating body to better estimate the danger and risk.

Safe work place values

The specified values are emission values and need not therefore represent safe work place values.
Although there is a connection between emission and emission levels, it still cannot be reliably derived whether or not additional precautions are necessary.
Factors which may influence the presently existing emission levels in the work place are:

- Tool model
- Machined material
- Duration of exposure
- Type of work room
- Other sources of noise
- Number of machines
- Other adjacent processes

Permissible noise emissions are based on the country-specific regulations in the country of the operating body.
If under certain circumstances, the noise emission level exceeds the country-specific limit values, the operating company must provide additional noise protection.



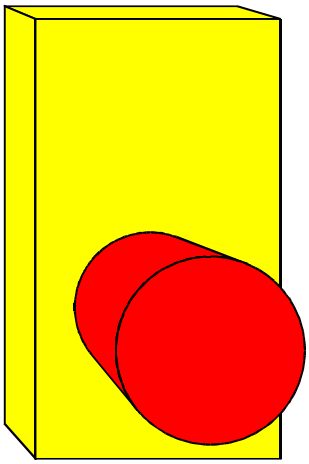
Note:
Changes in the level of noise emissions may indicate a fault.
Operators must familiarize themselves with the standard noise levels and react to any changes.

Danger:
Wear ear protection:
➔ **Continuous noise is damaging to the ears:**

6 Safety devices

6.1 Emergency stop

Emergency stop switches can be:
- Pressure switch
- Rip cord



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Only actuate **Emergency Stop** switch if personnel or machine is at risk.
Do not actuate the **emergency off** switch for general shut-down.
The **Emergency Stop** switch brings all potentially dangerous movements to a controlled stop as quickly as possible.

Danger:
Emergency Stop does not completely switch off the power to the machine.

Electrical energy is required for the following functions:
- Motor brakes
- Moving machine components to release injured persons
- Driving the glue roller in order to prevent hot-melt glue from escaping
- Maintaining the machine control function

Pneumatic energy is required for the following functions:
- To hold machine components in a defined position

Restarting after **Emergency Stop**

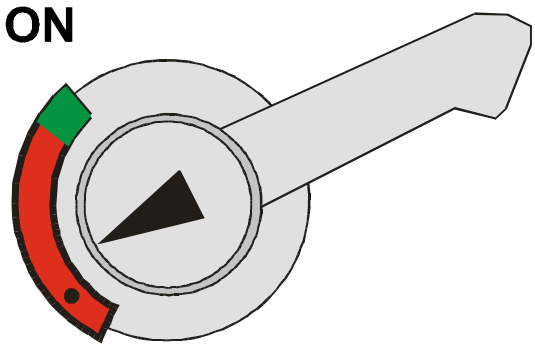
- Eliminate cause of **Emergency Stop** situation!
- Remove all workpieces from machine
- Unlock the **Emergency Stop** switch
- Switch on machine according to User Manual

6.2 Master switch

The master switch interrupts the electrical energy supply to the machine.
The main switch can be secured with a padlock to prevent the machine being switched on accidentally.

Danger:
The main switch is not an emergency stop switch

Turn off master switch before carrying out the following work:
- Maintenance
- Cleaning
- Repairs
- Tooling
- Operational interruptions



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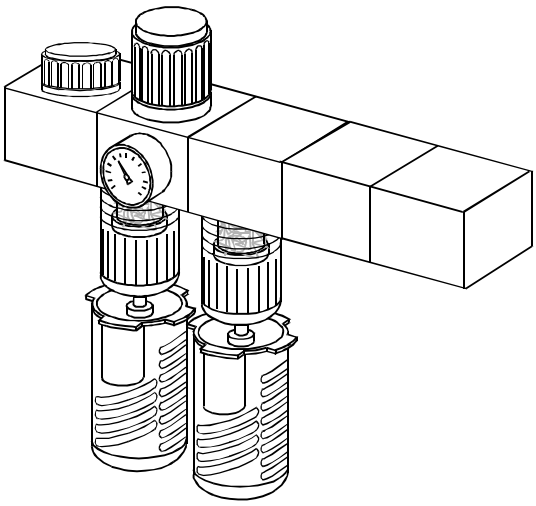
Switch off machine:
- Wait until all motors have come to a complete stop
- Turn off the master switch
- Padlock the master switch to prevent the machine being switched on again. Affix a warning sign on the master switch
- Close all compressed air valves
- Padlock compressed air valves to prevent unauthorized restart



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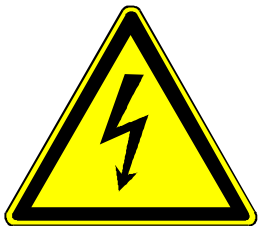
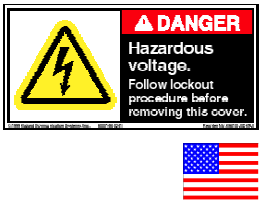
All personnel employed on the machine must secure the master switch and compressed air valve using their own padlocks.

Danger:
The input terminals in the control box are still under voltage even when the master switch is switched off
➔ **fatal injury!**





6.3 Residual risks when master switch is off

Electrical power

Connection terminals in the control box remain under voltage even when the master switch is off.
Supply to machine lighting remains under voltage.
Supply to control cabinet heater and electronic data memory remain under voltage.
Capacitors remain under voltage even when the master switch is off. Therefore, wait for 5 minutes after turning off the master switch before starting work in the control cabinet.

Pneumatic power

De-pressurize compressed air systems to prevent uncontrolled movements from occurring.

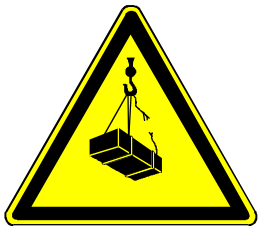
Hydraulic power

De-pressurize hydraulic systems to prevent uncontrolled movements from occurring.

Transmission energy

Rotating or moving components and tools may run-on.

Positioning power



Machine components may fall from their position.
If the gas pressure damper is faulty, machine covers may fall.
If the pressure in the hydraulic system falls, pressing plates may fall.
Workpieces may drop during loss of vacuum.
If necessary, secure components with suitable lifting gear.
Spring assemblies may become loose.
Tensioned chains may rip.

Thermal energy

Machine components may remain hot hours after the machine is switched off.
Examples:

- Glue tank
- Glue applicator
- Hot plates
- Processing units
- Tools

Magnetic fields

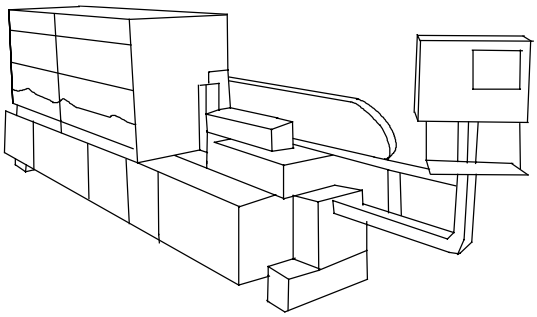
In certain areas, machines with linear magnetic drives have static magnetic fields of up to 1.2 Tesla.

These magnetic components may only be installed and removed in accordance with the component manufacturer's instructions and by qualified engineers.

Danger:
Do not place metallic objects near to these components.
➔ **Risk of injury!**

Persons with pace-makers, metallic implants and hearing aids must not enter this area.

Machine covers protect against:
- Noise
- Dust
- Chips
- Flying workpiece parts
- Areas likely to pinch
- Hot surfaces
- Rotating tools



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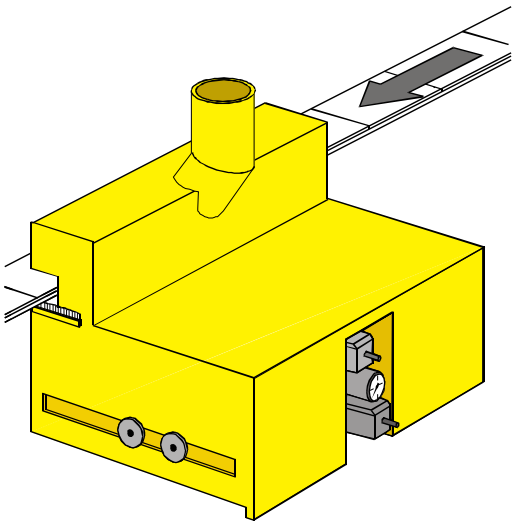
Always keep machine covers closed.

Switch off motors before opening the machine covers.

Wait until the motors have come to a complete stop

Protective hoods on machining tools serve as:
- Anti-contact devices
- Chip collecting device

Do not remove or affect the function of the machine covers or protective hoods whilst the machine is running



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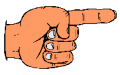
Danger:
Do not touch tools that have not come to a complete standstill:
➔ **Risk of injury!**

Do not turn the motor on unless the extraction hood is in place.

Before commissioning:
- Fit the machine covers and protective

  hoods properly.



Note:
Inspection window in the machine cover serves to aid production checks:
- Have damage repaired immediately
- Clean regularly

7 Emergencies

Damage to persons

- Keep calm
- Activate emergency stop
- Remove injured persons from dangerous situations
- Proceed carefully if a person becomes trapped
- Enlist help
- Perform first aid
- Call emergency services
- Emergency numbers are located at the nearest telephone

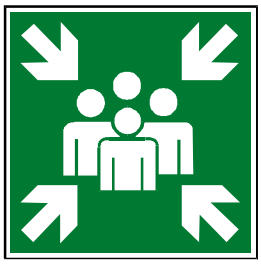
The emergency services offer first-aid courses

In case of fire

- Keep calm
- Report fire
- Isolate machine from main power supply
- Attempt to put out the fire

Precautions

- Mark the location of the fire alarm
- Instruct personnel on how to operate the fire alarm
- Provide operating instructions on the fire alarm
- Provide information on escape routes
- Set-up muster stations
- Provide information on where to find and how to operate fire extinguishers
- Suitable fire extinguishers
  - Dry-powder
  - carbon dioxide extinguishers for
  - electrical components



Danger:
When using carbon-dioxide extinguishers in small, badly ventilated areas, there exists:
➔ **Danger of suffocation!**

Reconstruction

In the event of fire harmful gases and vapors are generated from oils, lubricants, plastics and paint on the machine.

After a fire, consult with repairs company and service team:

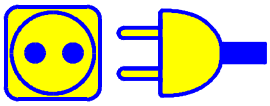
- Corrosive vapors cause rust to form on the machine.

8 Operating the machine

8.1 Starting

Unloading instructions

Observe unloading instructions on the transport packaging.



Transport damage

- Examine packaging and machine for damage immediately upon delivery
- Notify transport company of any damage within the stipulated period
- Notify the manufacturer and the transport insurers of any damage immediately
- Never operate a damaged machine

Storage

- Only store machines in a dry, oiled and lubricated condition
- Store machines to protect against adverse weather conditions
- Use additional corrosion protection if storing machines over a long period

Transport preparation

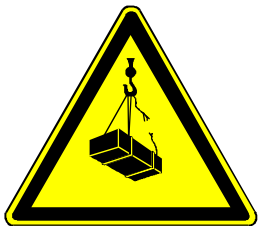
- Move machine into transport position (see Operating Manual)
- Isolate machine from external connections
- Remove tools
- Tighten clamps
- Fit transport fasteners
- Prepare stopper points (see Operating Manual)
- Observe weight of machine (see shipping documents)

Transport

- The machine may only be transported by qualified personnel with experience of transporting heavy loads
- The director must be in view of or in verbal contact with the driver
- Only transport the machine with suitable lifting gear
- Only transport the machine with lifting gear in a technically perfect condition
- Only transport the machine using loading equipment with adequate load bearing capacity
- Ropes, stacker arms must only reach to the released stopper points
- Do not allow transport belts to come into contact with clothing
- Do not use sensitive parts of the machine for pushing, pressing or pulling

Danger:

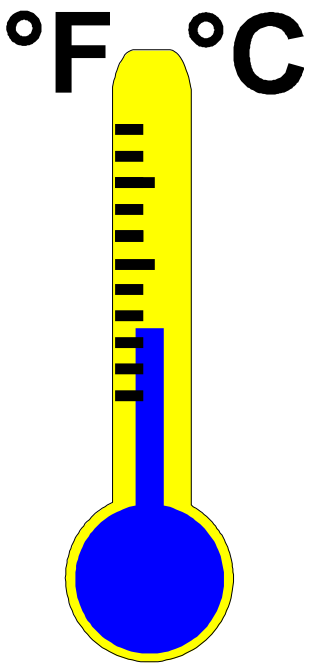
- The center of gravity is not necessarily in the middle
- Always protect load from inadvertent position changes
- No person may stand beneath suspended loads



Transport fasteners

- Always remove transport fasteners properly before re-starting
- Always remove transport devices properly before re-starting
- Refit components removed for transport
- Check all fasteners

Ambient conditions



The machine is designed primarily for use in closed rooms.

Ambient conditions for operation:
- Max. 80% relative air humidity (not condensing)
- Ambient temperature approx. 5 °C... 40 °C

Danger:
If the above values are not observed, any malfunctions in the control system may trigger machine movements
➔ **Risk of injury!**

Machines must be protected against:
- Climatic influences
- Flashes of lightning
- Hail stones
- Electro-static charge
- High humidity
- Rain
- Salty air near to the sea
- Severe temperature fluctuations
- Ground vibrations
- Grinding dust
- Chemical vapors
- Unauthorized access
- Rodents
- Insects

Floor load bearing capacity

The load bearing capacity of the floor must correspond to the details in the Operating Manual (see general and suction plan)

If the load bearing capacity is inadequate
- Lay a foundation
- Observe the requirements

Working area

- The working area must offer access for control and maintenance
- Note and observe the safety areas of adjacent machines
- Make any required interconnections safe
- Provide bridges as safe connecting routes

Country-specific regulations

Machines must be set up with the country-specific regulations as a priority:
- Observe laws
- Observe regulations, for example:
  - Escape routes
  - Protective enclosures

Connect machine

- Do not lay cables across the working area of the operator
- Do not pinch or bend cables
- Cables must not be under strain
- Cables must at no point be subject to abrasion
- Observe movements and travel paths of the machine

This applies for
- Power cables
- Pneumatic cables
- Hydraulic cables
- Coolant cables
- Suction cables

Electrical connection

- Observe the details in the Operation Manual
- The machine may only be connected to the mains power supply by qualified electricians who are familiar with the local

  conditions
- Ensure contact screws are tight
- Check rotational direction of all motors
- Check motional direction of linear magnetic motors

Pneumatic connection

Observe the details in the Operating Manual:
- Layout and suction diagram

Caution:
- Compressed air must be dry and filtered
- Observe compressed air quality
- Connect compressed air cables by means of electrically insulated adapters

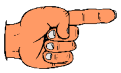
Connection to suction device

- Never operate machine unless the suction device is working properly
- Observe the details in the Operating Manual:
  (see layout and suction diagram)
- Observe connection cross-section
- Observe air speeds
- Observe air volumes
- Flexible suction hoses must be made of nonflammable material
- Connect suction device cables by means of electrically insulated adapters

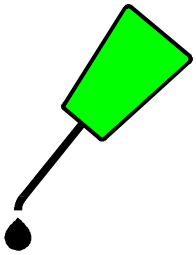
Welding work

Danger:
Welding work must never be carried out on the machine!
Incorrect flows or delayed heat may cause:
Severe machine damage!

8.2 Maintenance



Note:
Maintenance work on machines may only be carried out by qualified personnel.
- Observe maintenance instructions



Observe specified periods for following work:
- Recurrent, general inspections
- Checking the safety equipment
- Settings work
- Routine maintenance
- Exchanging components
- Exchanging parts of equipment

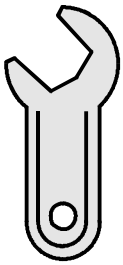
Before maintenance, repair work and cleaning work:
- Nominate qualified supervisory personnel
- Switch off machine
- Ensure that the machine cannot inadvertently be switched on again:
  - Secure master switch with a padlock
  - Secure compressed air shut-off valve with padlock
  - Affix warning plate to master switch and compressed air valve
- Do not open machine covers until the machine has come to a complete standstill

For maintenance work, carry out a visual check on the following components
- Pneumatic cables
- Hydraulic cables
- Electrical cables
- Coolant cables
- Suction cables

Possible damage includes:
- Areas subject to abrasion
- Loose connections
- Damaged insulation
- Leaky areas

Report all faults and ensure that they are rectified by qualified personnel or electricians.

Assembly tools



Suitable workshop equipment is absolutely essential.
Only approach the machine when the tool has been numbered.
Count the tools before re-starting, to ensure that none remain in the machine.
Do not allow any tool to be inserted into the machine.
Do not place any tool on the machine.

Assembly work

For assembly work above body height:

- Do not climb on parts of the machine
- Use the appropriate steps and work platforms
- Keep steps clean
- Wear fall protection

Repairs

- Use only original parts

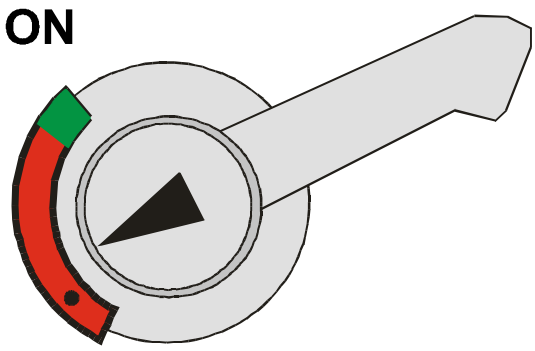
When using parts from other manufacturers, the manufacturer shall be liable for neither damage to persons or property, nor for the proper functioning of the machine.

Cleaning

- Use lint-free cloths for cleaning
- Do not use aggressive cleaning agents
- Do not use high-pressure cleaners
- Do not use water
- Do not use flammable solvents
- Do not use compressed air
- Fit safety equipment immediately on completion of the work and check that it functions properly
- Re-tighten loose bolt connections
- Check all bolt connections

Work on electrics

Turn off master switch before any work is carried out on live components The master switch can be padlocked to prevent the machine being switched on again.



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Work on electrical equipment may only be performed by a qualified electrician under observation of the electrical regulations.

- Only use insulated tools
- Check electrical equipment for visible defects at least quarterly
- Rectify faults such as loose connections immediately
- Only use safety devices (fuses, motor circuit breakers, automatic fuses etc.) with the prescribed technical data
- Turn off machine immediately in the event of faults in the electrical power supply
- Only open and close the control cabinet when the machine is switched off (master switch off, i.e. in the **OFF** position)

Machine parts on which maintenance or repair work needs to be conducted:

- Switch off from the power supply
- Check disconnected parts first for no-voltage, then earth and short-circuit
- Insulate live, adjacent components

Danger:
Live parts can cause
➔ **fatal injury!**

If it is necessary to work on live components:

- Ensure a second person is present, who can switch off the machine using the master switch in an emergency
- Cordon off the work area with a red-and-white safety chain and a warning sign

When working on high voltage modules:

- Connect the power cable to earth and short-circuit the components, e.g. capacitors, with an earthing rod
- After installing or repairing electrical components, test the safety measures used (e.g. earthing resistance)

Work on pneumatics

Work on the pneumatic equipment may only be performed by qualified personnel with special knowledge and experience of pneumatics

- De-pressurize pressurized lines to be opened before carrying out maintenance work on pneumatic components
- Lay and assemble compressed air lines properly
- Do not confuse connections
- Check cables, hoses and bolts for leaks and externally visible damage at least quarterly, rectify any faults immediately

Work on hydraulics

Work on the hydraulic equipment may only be performed by qualified personnel with special knowledge and experience of hydraulics:

- De-pressurize pressurized lines to be opened before carrying out maintenance work on hydraulic components
- Lay and assemble hydraulic lines properly
- Do not confuse connections
- Check cables, hoses and bolts for leaks and externally visible damage at least quarterly
- Rectify any faults immediately

Controls

Machine movements can be triggered by the following equipment:

- Buttons on the control panels
- Control functions
- Remote control buttons
- Foot switch
- Toggle switch
- Key-operated switch

Observe the Operating Manual

Machine programs

Machine programs are password-protected.

Danger:
Do not make changes to the machine programs (software).

Repair of controls

Plug-in control cards must be exchanged for repair.
Never activate the master switch unless a plug-in card is inserted into the control, otherwise uncontrolled machine movements may be triggered.

8.3 Conversion / changes

If conversion or changes are made independently, the manufacturer shall be liable for neither damage to persons or property, nor for the proper functioning of the machine.
Conversions and changes may only be carried out with the written approval of the manufacturer.

8.4 Disposal / environmental protection

Always observe country-specific regulations for disposing of the machine or machine components. Ensure that the method of disposal is compatible with the environment. Where possible, use officially approved disposal companies.

Separate material groups

- Electrical and electronic scrap
- Steel scrap
- Plastics
- Wood materials

For storing waste, separate

- Wood
- Plastics
- Metals
- Oils / greases

Danger:
Hot metal chips can ignite other materials.
Examples:
- Wood chips
- Oil-drenched cloths

➔ **Danger of fire!**

8.5 Machining tools

Handling

- Only handle tools when wearing suitable protective gloves
- Store tools so as to protect from damage
- Only transport tools when packed or in a suitable container
- Only fit tools when they are in a clean condition
- Do not reach into the area near rotating tools
- Cover tools when carrying out repair work on the machine
- Observe the rated speeds of the tools
- Check direction of rotation
- Observe the details of the tool manufacturer
- Check the tool is secure after fitting
- Observe protection and safety regulations for handling wood machining tools
- Do not use HSS saw blades

Danger:
- Machining tools have sharp blades
- Rotating tools are not always visible

➔ **Risk of injury!**

Isolate master switch and ensure the machine cannot inadvertently be restarted when working on tools fitted into the machine.

Service tools within the specified periods

Service tools in the following cases:

- When the blades are visibly torn
- The machine noticeably consumes more power
- The workpiece surfaces no longer meet the specified requirements

Reversing plate tools

- Observe the tool manufacturer's Operating Manual
- Fit the reversing plate tools carefully
- Keep the reversing plate clean
- Clean the tool body before fitting the reversing plates
- Load tool complete
- Tighten bolts as described in the Operating Manual
- Only use original reversing plates and spare parts

Insert tools

- Use original spindle rings
- Check direction of rotation
- Observe the Operating Manual
  - Many units have changeable rotational directions
- Check direction of threads for tool fixing
- Only fit spindles with permissible tool dimensions (See tool layout plan)

- Check tools for:
  - Fractures
  - Changes in shape
  - Discoloration
  - Unbalanced condition
  - Sharpness
  - Permissible tool speeds
  - Permissible feed methods
  - Bolts on the tool must be tight
- Tools must be the same temperature as the machine, otherwise the tool fastener may become loose as a result of shrinkage

- Thoroughly clean:
  - Spindles
  - Support surfaces
  - Spacer rings
  - Securing rings
  - Spindle nuts

- Tighten spindle nuts
  (Observe the Operating Manual)

After fitting the tool:

- Check idle run before starting by manually rotating the tool
- Fit protective hoods
- Check smooth running during switch-on and test run
- Check entries in the tool database:
  - Magazine slot
  - Tool type
  - Tool data

After removing the tool:

- Check tool immediately
- Mark damaged tools and ensure they cannot be refitted
- Have damaged tools repaired
- Clean spindles and protect against corrosion

9 Accessories

9.1 Laser

- Do not look into the light source of the laser
- Do not make changes to the machine
- Do not allow reflective surfaces in the area of the laser light
- Only operate the equipment in an undamaged condition

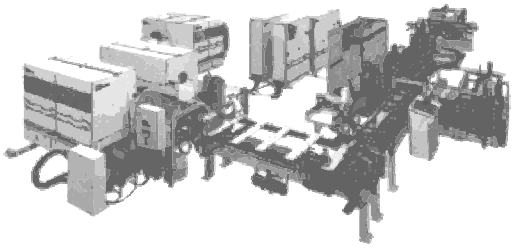
Danger:
Do not look into the light source:
➔ **Laser light can damage the eyes!**

10 Production lines

10.1 Designated use

Production lines serve to machine wood and wood materials in accordance with the technical data. The following operations are carried out for this purpose:

- Feeding
- Transporting
- Positioning
- Processing
- Stacking



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Other materials may only be processed with the written permission of the manufacturer.

The production lines are not suitable for processing metals.

All parts of a production line are adapted to suit the designated use. This concerns:

- Feeding units
- Roller tracks
- Processing machines
- Rotary transfer stations
- Stacking units

Details in the assembly plan and on the order confirmation must be observed.

10.2 Security

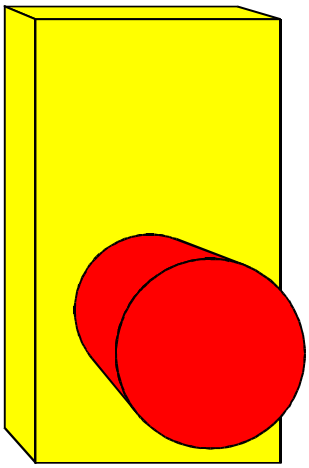
If as contractually agreed, the operating body undertakes to provide security for the transport equipment by means of barriers, fences, secured doors, these must be equipped in accordance with the manufacturer's specifications and the country-specific regulations.

- Areas for the following activities must be kept clear:
  - Loading with raw material
  - Unloading finished products
  - Removing waste or rejects
- Mark safety areas
- Keep passageways free

10.3 Operation

Overviews of production lines can be difficult
Therefore check:

- The operation and function of the individual machines
- Safety areas
- Workpiece movements
- **Stop feed** and **Emergency stop** functions
- Learn and test the position and function of the emergency **stop** equipment



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Switch-on production line

- Observe the Operating Manual

Danger:
Ensure that no-one is at risk from the operating production line!

Feed speed

Synchronize the feed speeds and cycle times for all individual components.

Faults

In the event of a fault, take the appropriate action:

- **Feed stop**
- **Emergency stop**
- Stop supply of materials to faulty area
- Notify the operator

Danger:
from moving machine parts and workpieces
Never reach into the following areas:

- Conveyor belts
- Roller tracks
- Stacking devices
- Rotary transfer stations

➔ **Danger of getting caught!**

10.4 Maintenance

- Keep transport units clean
- Remove material residues
- Keep all steps, platforms and ladders clean

Caution:
Never climb on parts of the machine

If certain areas have to be switched off for set-up and maintenance work, ensure that no materials are fed to the production line.

Danger:
Only seal off enclosed hazardous areas, when you are sure that the area is clear of personnel.
Ensure that unauthorized persons cannot access hazardous areas.

Note:

We would point out that the content of the Operating Manuals and the product documentation does not form or change any part of previous or existing agreements, assurances or legal relationships. All obligations of the manufacturer are derived from the particular purchase contract, which also contains the complete and only valid warranty regulation. These contractual conditions are neither expanded nor limited through the context of these regulations, instructions or documentation.

2 Safety Regulations

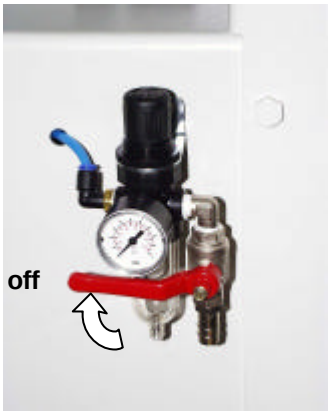
2.1 Safety Recommendations

2.1.1 Non-operation, longer standstill times and working breakes

1. Main switch in „**0ff-Position**“ (Observe indication advice)

off
Hauptschalter erst nach Bandstillstand ausschalten. Nach dem Ausschalten bleibt das Pneumatiksystem unter Druck.
Main switch only to be switched off after standstill of abrasive belt. The pneumatic system remains under pressure after switching-off.

2. **Close –** compressed air supply



2.2 Safety – Switch Devices.

The following safety switch devices are installed for the protection of the operating personnel and the machine.

Lockable Main Switch:

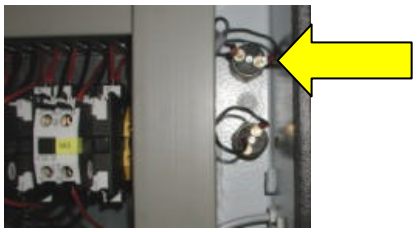
In order to prevent unintentional switching-on.

Back side

Front side

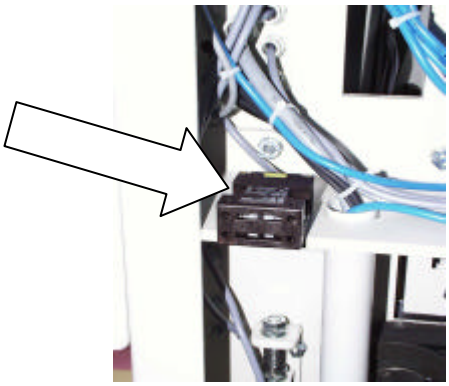
Emergency switch off:
switches off all the drives.
Switches on the brake for the abrasive belt.

the abrasive belt oscillation remains in function.



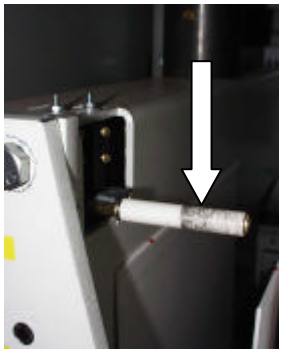
Pressure regulator:

If the necessary air pressure for operation is falling short, the pessure regulator switches off the drive motors and the feed.



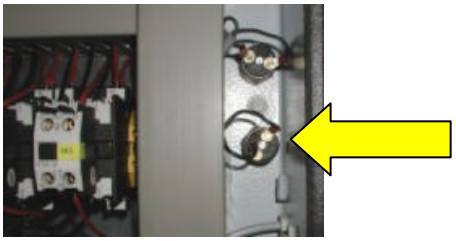
Door locking:

The drive an only switched on when the doors are locked.



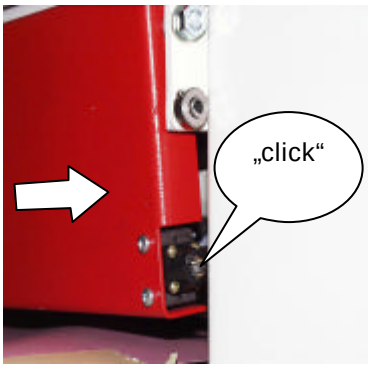
Belt running off switch::

The abrasive belt drive is switched off when the abrasive belt is running off.



Belt tear – belt tensioning switch:

switches off the abrasive belt drive in case of belt tearing and prevents the switching on, if the abrasive belt is not tensioned.



Safety switch rail:

switches off the feed drive

Limit switch:

for thickness adjustment. Limits the workpiece passage
to **min 3 mm** and **max 150 mm / 0,118 inch** and **5,905 inch**
workpiece thickness.

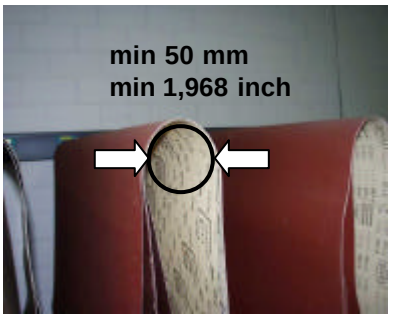
Overthickness protection (switch roller)

Switches off the feed drive during excessive thickness deviation (max. 2,5 mm/ 0,098 inch)) of the workpiece.
The height adjustment remains in function.

2.3 Safety Recommendations of Abrasive belts

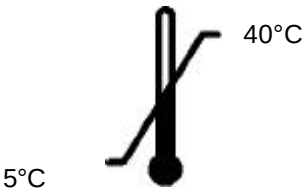
Transport and Storage

Place the abrasive belts on bar of min. 50 mm / 1,968 inch dia., after taking out of the original packing.

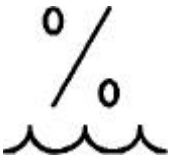


Careful treatment. No throwing, pushing or bending

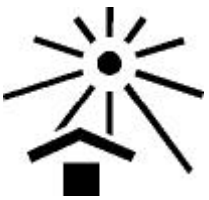
- Storage temperatures between 5° C and 40° C



- Air humidity between 45 % and 65 %.



- protect against direct sun influence



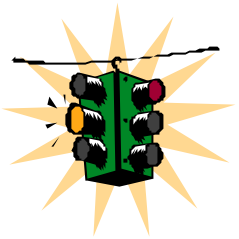
- Please keep sanding tools in their original packing until use.

Other Safety Recommendations

- Observe limitations of use and special indications of use of the abrasive belt supplier.
- **Only switch off the sanding machine, when there are no more workpieces inside the machine.**
- **Slacken** abrasive belt during loger standstill times**!!**
  If an abrasive belt remains tensioned, it can become wavy. .

Preparing for sanding

- Check if abrasive belts are ok.
- Observe running direction (arrows) of the abrasive belts.



Sanding

- Sanding machine must achieve maximum idle running speed
- **Then** the sanding process can start.
- Abrasive belt should preferably charged in the centre.

Abrasive Belts in Use

- Belt joints can leave marks on the workpiece.

Belt joint may not be thicker than **max. 0,02 mm** as the abrasive belt.

- Abrasive belt is creasing diagonally and tears

Reason: Abrasive belt **too damp.**

➢ **Change abrasive belt.**

- The dry abrasive belt is creasing diagonally and tears.

Reason: Tension pressure too high.

➢ **Reduce** tension pressure.

- A wavy belt causes marks on the workpiece.
- A wavy belt can damage the conveyorbelt upon minor workpiece thickness.

➢ **Change abrasive belt**.

3 Transport / Installation.....2
3.1 Dimensions and Weight.....3
3.2 Reliable Devices and Means for Transport.....3
3.3 Installation and Connection.....4
3.3.1 Levelling of Machine 6

3 Transport / Installation

The following safety regulations have to be observed for the transport of the machine – highly dangerous personal injuries, damage of machine and other damages are thereby prevented.

- The transport works may only be carried out by qualified personnel under the observation of the safety regulations.
- The machine may only be lifted on the holding points provided.
- Only load suspension devices may used for the transport of the machine.
- Observe total weight of machine.
- The transport ways are to be shut off and secured, so that no unauthorised persons may enter the danger zone.
- Industrial floor with sufficient load-bearing capacity.

Danger

No persons may be underneath suspending load!

3.1 Dimensions and Weight

- Length: 1010 mm / 40”
-
- Width: 1450 mm / 55 “
- Height: 1800 mm / 71”
- Gewicht: ca.950 kg / 2090 lbs

3.2 Reliable Devices and Means for Transport

The machine is delivered on a pallet of skids.

Lifting of machine by:

- Forklift
- low lift platform truck

Attention!
Dumping danger

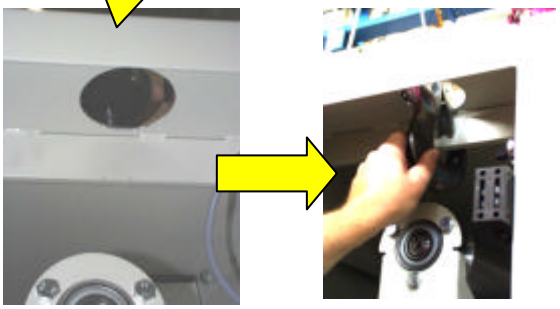
- Crane

Attention!
Observe load bearing

Suitable means of transport

- Chains
- Ropes

Attention!
Observe minimum charge



2 openings are situated on the upper side of the machine.
Pull-off covering caps and pull through rope or chain.

3.3 Installation and Connection

Room features:

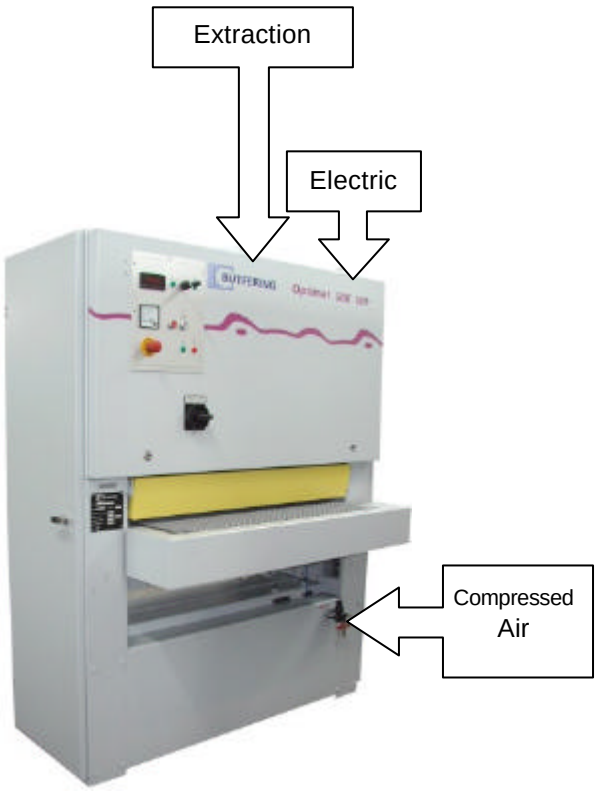
- Closed, heatable

- Temperature 5°C to 40°C (41°F – 104 °F)

- Relative air humidity max – 80 %

Necessary Connections

- Electric
- Compressed Air
- Dust collector



Attention
Use suitable lifting means.
Angle between 45° and 60°!

Attention!
Machine may only be placed on solid ground.

A foundation must be built, if the necessary load-bearing capacity is not guaranteed.
An uneven surface of the floor can lead to deformation of the machine frame and can have influence on the parallelism between feed table, pressure rollers and contact roller.

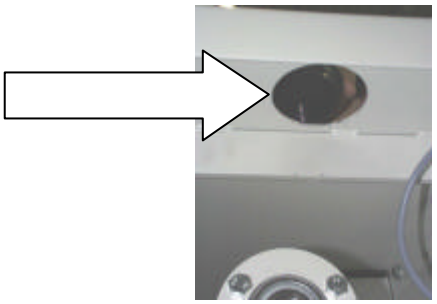
Please observe the following in order to prevent costly adjustment works:

- All feet must be standing firmly on the floor.
- Level unevennesses !

Observe minimum floor charge !!

After the machine is installed

- Put in cover caps.



3.3.1 Levelling of Machine

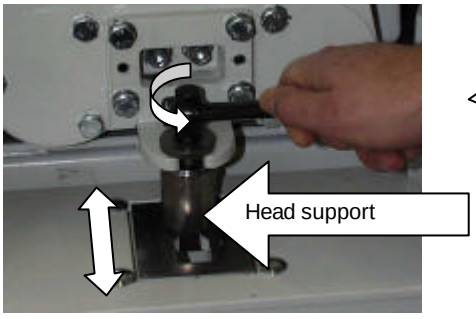
All machine elements are levelled to the table area. These adjustments should be checked upon installation, but not be changed without necessary reason.

- Level machine in cross and longitudinal direction.

Levelling in cross direction

Levelling in longitudinal dir

- The machine is levelled correctly, when the head support can be slightly moved after releasing the tension lever



4 Commissioning.....2
4.1 Electrical connection.....2
4.1.1 Electrical Connection- Dust Extraction.....3
4.2 Connection to the Compressed Air Supply.....4
4.3 Connection to Dust Extraction...5

4 Commissioning

In order to prevent machine damage or personal injury upon machine commissioning, the following instructions are to be observed:

Connections to electrical power supply, compressed air, and dust extraction may only be carried out by **qualified personnel** according to the applicable safety regulations.

The position of the feed table to the upper pressure rollers and the contact roller are to be checked before commissioning of the machine.

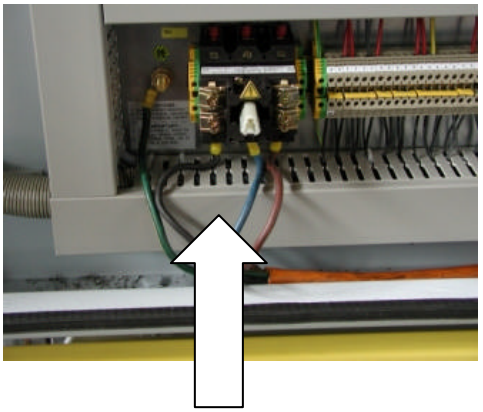
4.1 Electrical connection

- Observe regulations of local power supply companies.
- **Connection values are taken from the wiring diagram.**

Warning! Electrical Danger!

Power supply from above

Attention!
Observe the correct phase connection (clockwise rotation)



The power supply is to be connected to the terminals L1,L2, L3 of the main power switch.

Connect the earth strip to clamp PE.

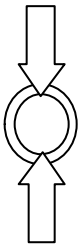
4.1.1 Electrical Connection- Dust Extraction

- A 'normally open' contact is available for switching on the dust extraction. This is located inside the electrical cabinet (see wiring diagram). When using this, the dust extraction can be started by switching on the conveyorbelt feed motor.

4.2 Connection to the Compressed Air Supply

Attention!
Only dry, filtered and oil-free compressed air should be used.

Compressed air feeding = min **8mm**
= min 3,15”



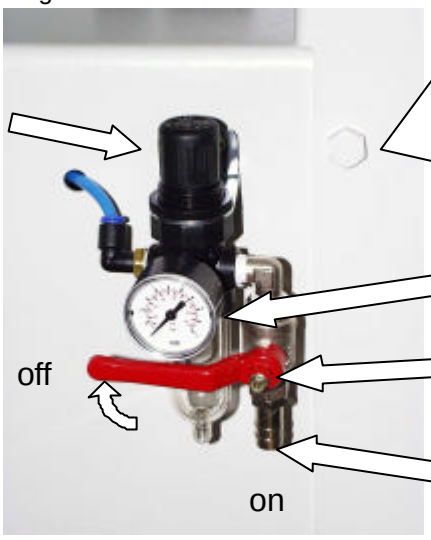
Compressed Air
min. 6 bar / 82 psi
max. 8 bar/ 100 psi

If the compressed air exceeds 8 bar 100 psi), an additional pressure regulator must be fitted.

The compressed air requirement (air consumption) is 10 l/min / 1 cfm.

Pressure regulating valve for air supply, abrasive belt tension and conveyorbelt tracking

Regulator



Air gauge

Shut-off valve

Compressed air inlet

The shut-off valve is to be closed when the machine is not in use.

4.3 Connection to Dust Extraction

Please observe the latest edition of the "Safety Regulations for hazardous materials" TRGS 553 (Wood dust) and the code of pratice "Wood Dust" ZH 1/739. Other local codes may also apply.

For electrical control of dust extraction:
see '**connection to power supply.**'

For the position and dimensions of the dust outlet:
see the '**machine floorplan**'

The minimum air speed on the dust outlet is **20 m/sec./65 ft/sec**
Dust extraction influences the sanding quality and abrasive belt lifetime.

Please take the recommended minimum extraction volume from the **technical data.**

Blast gate

The ductwork should be fitted with a **blast gate or damper.**

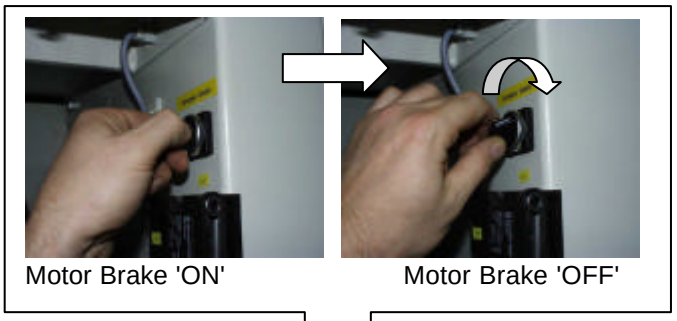
The extraction strength should be reduced by using a blast gate (not supplied) when thin workpieces are to be processed. This is to prevent the **conveyorbelt from being sanded.**

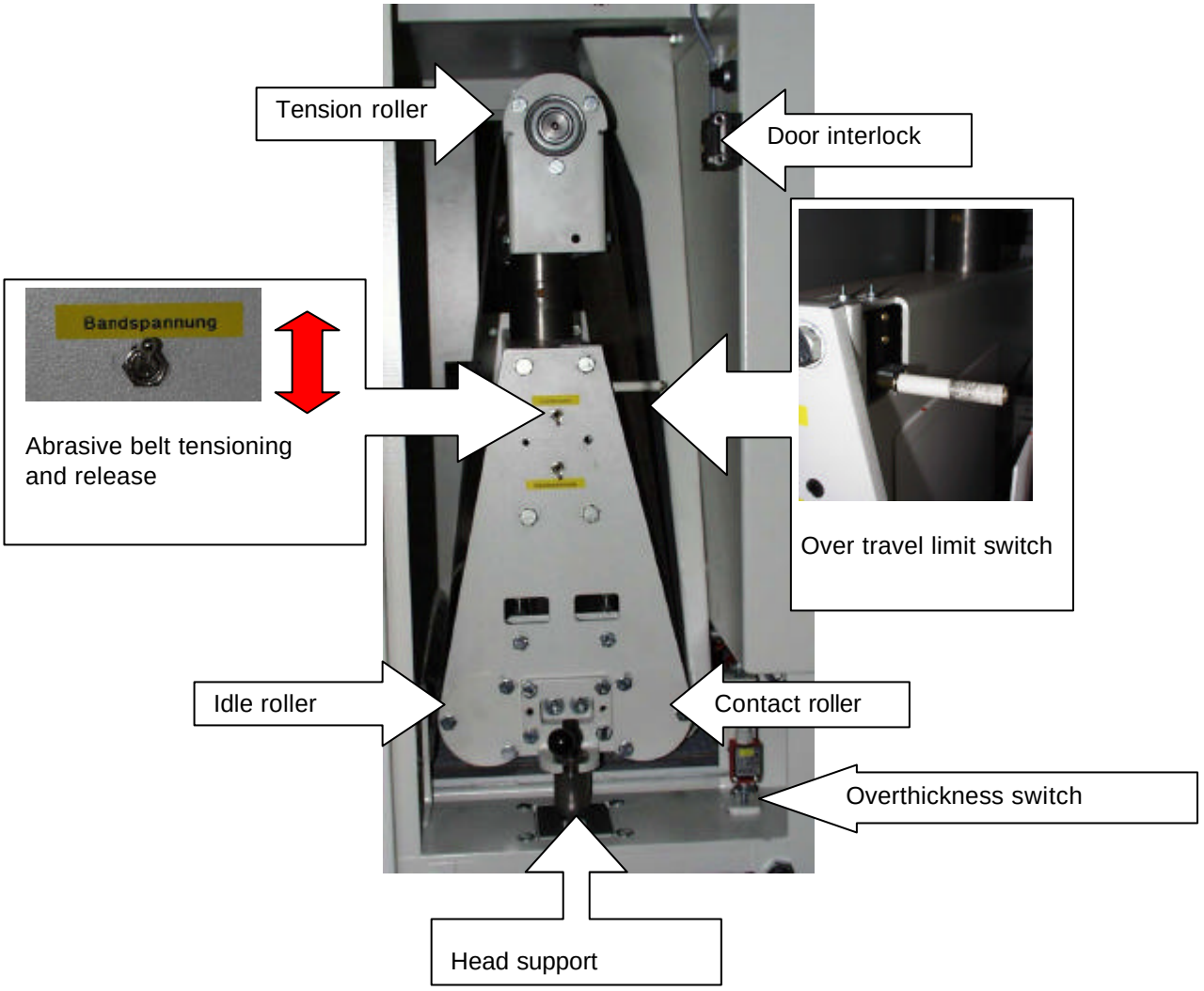
5 Components 2
Sanding Head 2
5.1.1 Abrasive belt changing side 2
5.1.2 Drive side 3
5.1.3 Tensioning and oscillation of the abrasive belt 4
5.2 Feed table 5
5.2.1 Machine Layout 5
5.2.2 Conveyorbelt tracking 7

5 Components

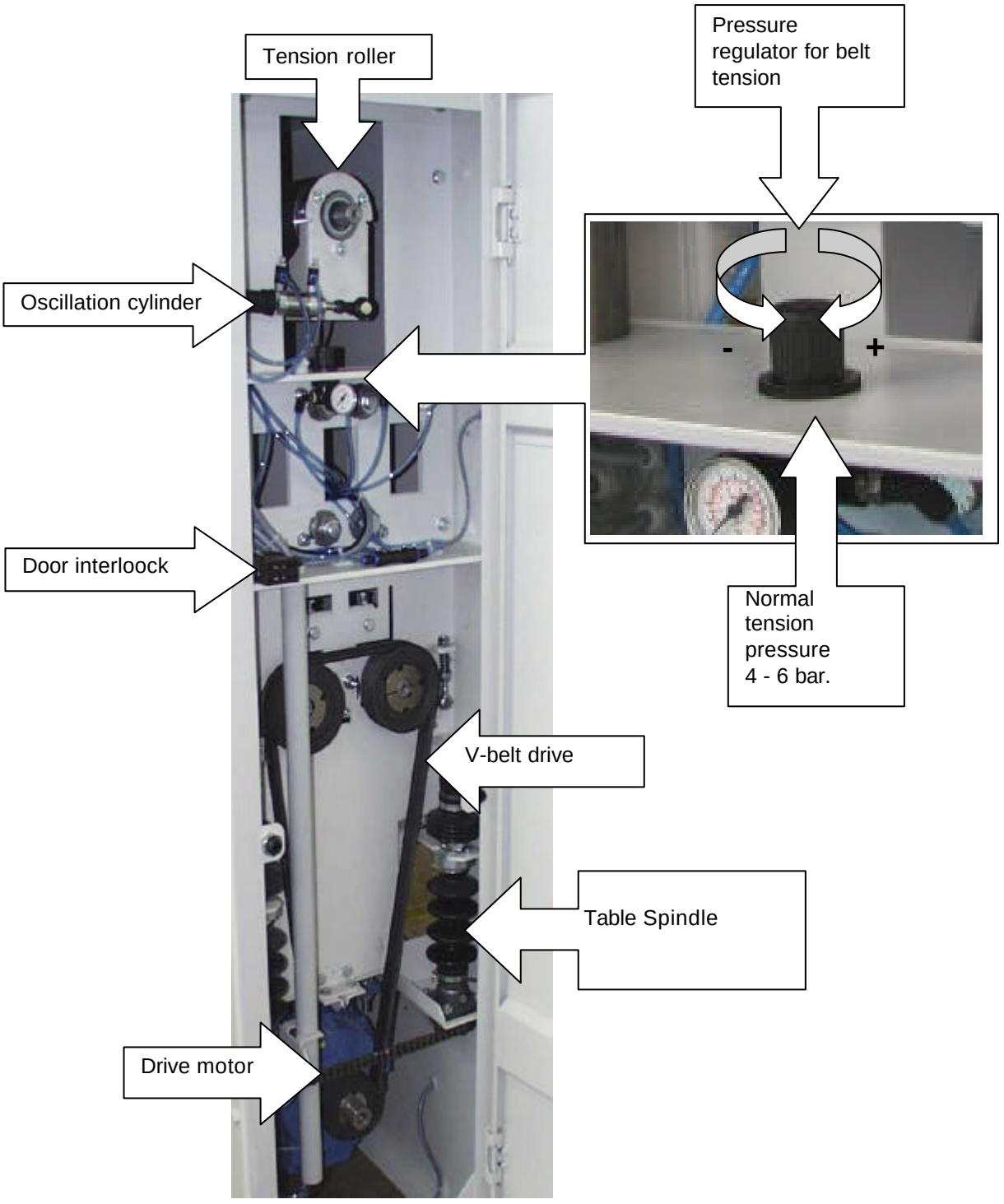
5.1 Sanding Head

5.1.1 Abrasive belt changing side





5.1.2 Drive side

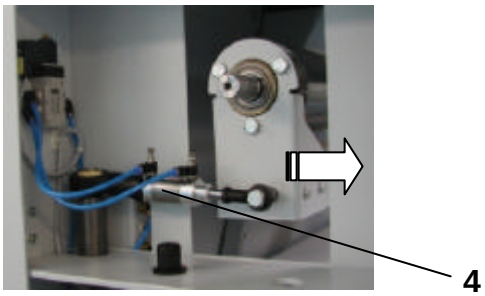


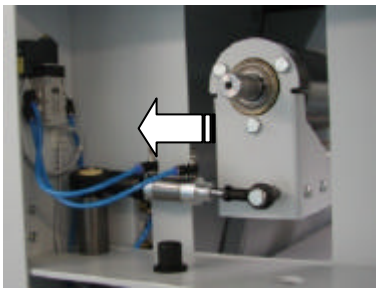
5.1.3 Tensioning and oscillation of the abrasive belt

The abrasive belt is tensioned by a centrally positioned air cylinder. The tension roller is able to pivot on top of this cylinder to steer the abrasive belt, and keep it on 'track'.

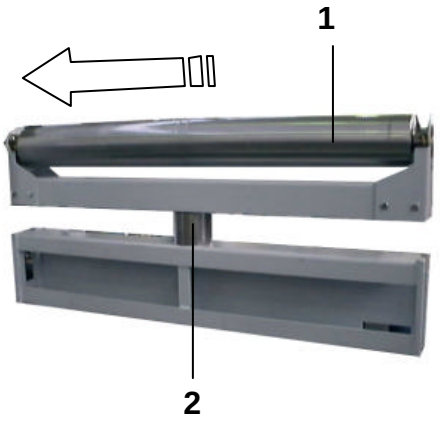
The right hand edge of the abrasive belt is sensed by an infra-red light scanner, which controls the air flow to an 'oscillation cylinder' via a solenoid valve.

1	Tension drum
2	Tension cylinder
3	Main support
4	Oscillation cylinder

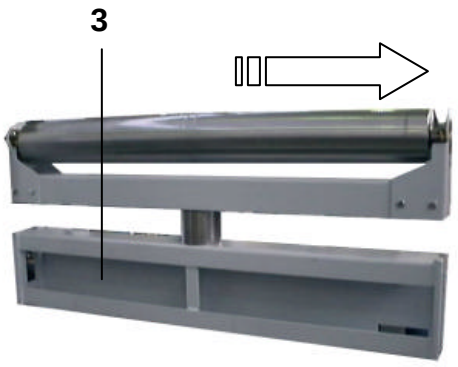




The tension roller is moved to the left or right, by the oscillation cylinder.



Movement of the abrasive belt to the left

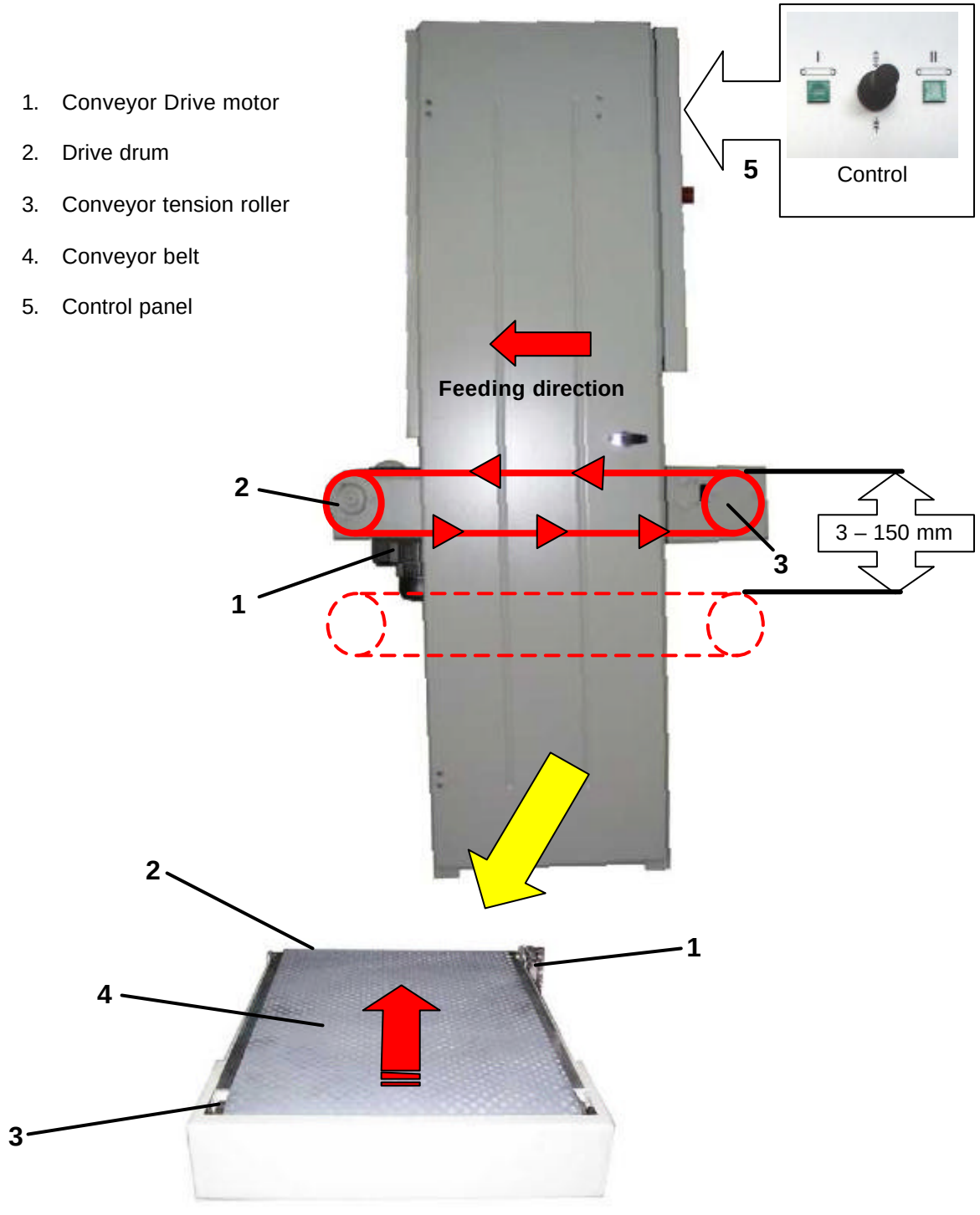


Movement of abrasive belt to the right

5.2 Feed table

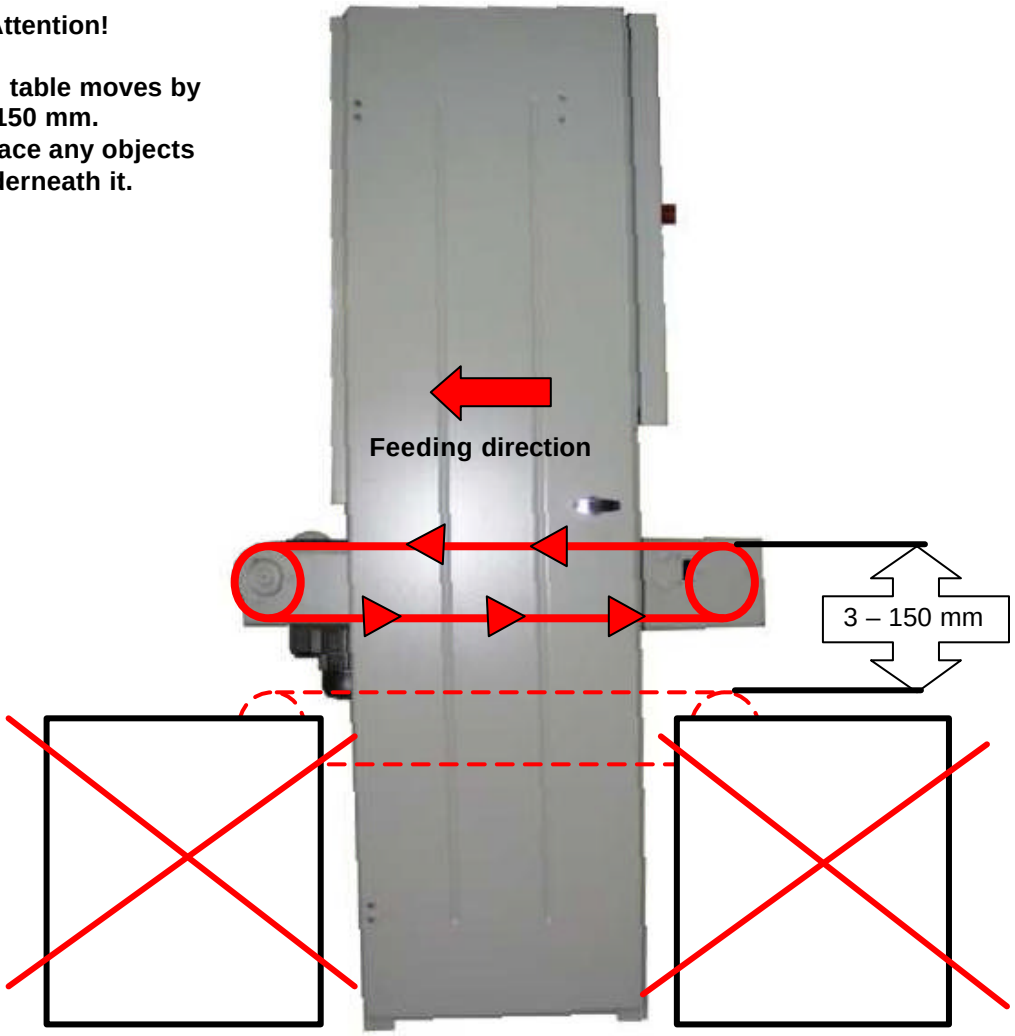
5.2.1 Machine Layout

1. Conveyor Drive motor
2. Drive drum
3. Conveyor tension roller
4. Conveyor belt
5. Control panel



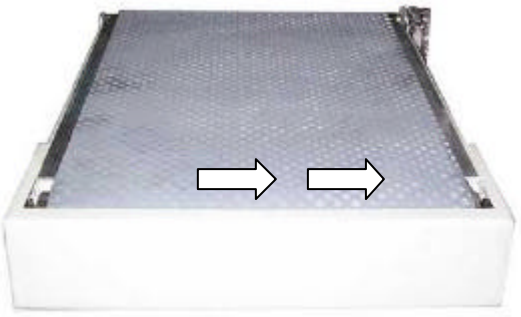
Attention!

**The feed table moves by 150 mm.
Don't place any objects underneath it.**

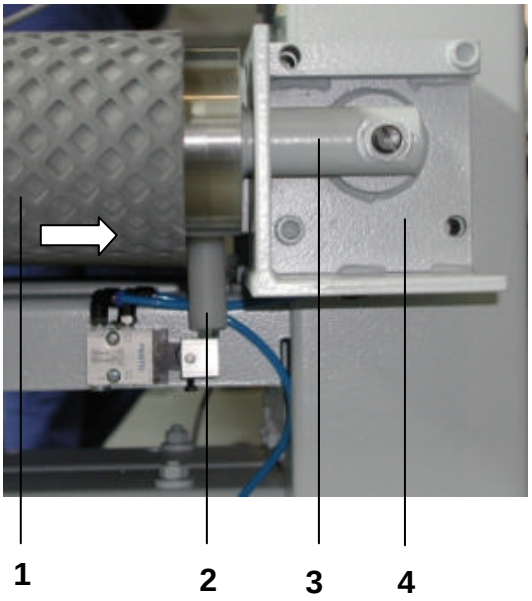


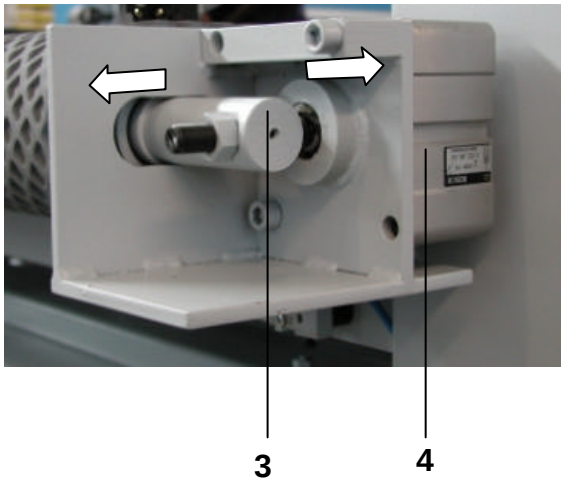
5.2.2 Conveyorbelt tracking

The conveyorbelt is kept on track by a steering system acting on the conveyorbelt tension roller. This is situated at the infeed side of the machine at the right hand side. When the conveyorbelt moves too far to the right hand side, it pushes on a sensing roller, which activates an air cylinder to apply more tension to the conveyor. This has the effect of keeping the conveyorbelt on track.



1	Conveyorbelt
2	Sensing Roller
3	Tension roller shaft
4	Tracking cylinder





6 Operation.....2
6.1 The Workplace around the machine.....2
6.2. Description of Operating Elements.....3
6.2.1 Control Panel.....3
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6 Operation

6.1 The Workplace around the machine

Machine Infeed area 1

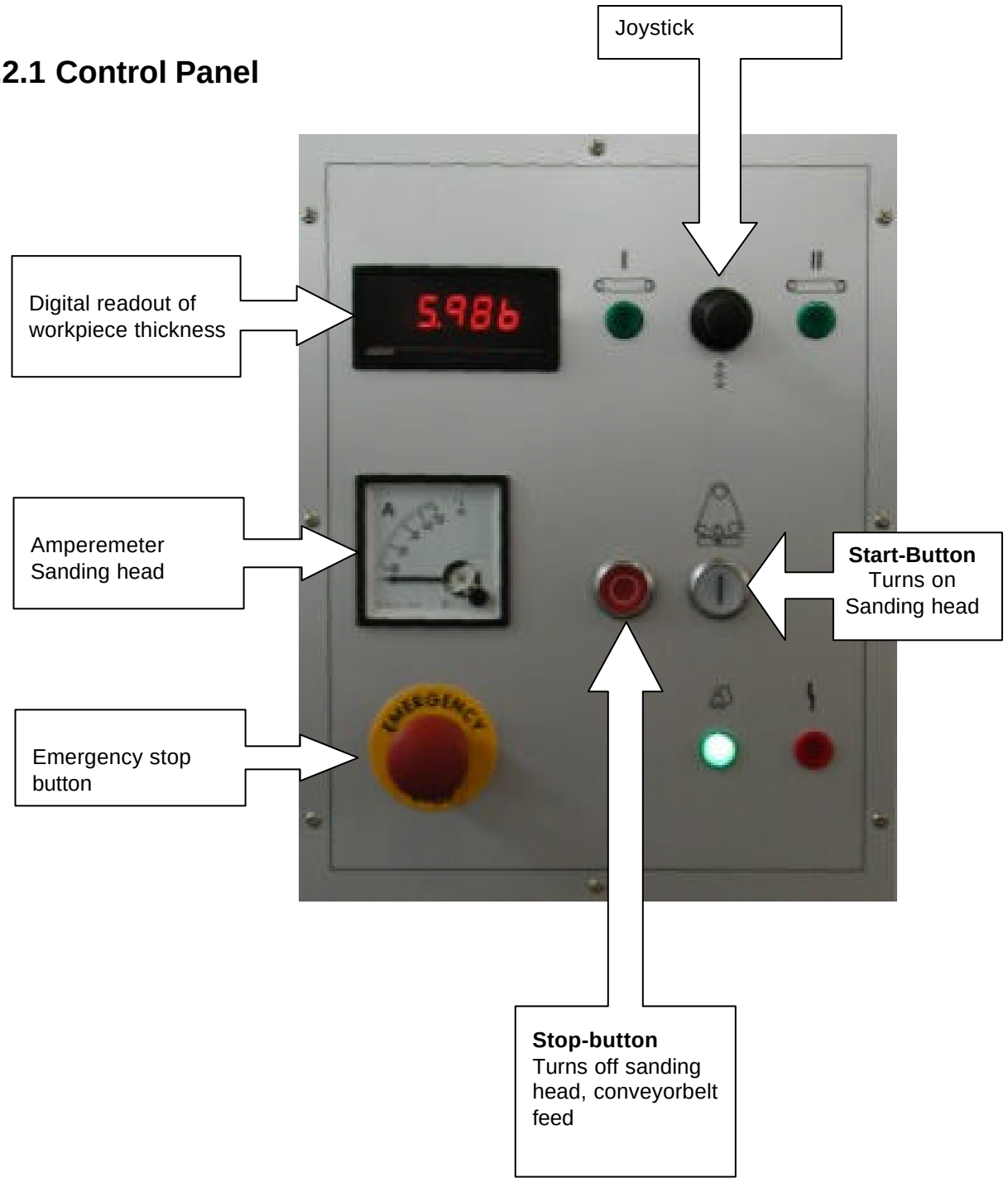
- Machine operating side
- Workpiece feeding

Machine Outfeed Area 2

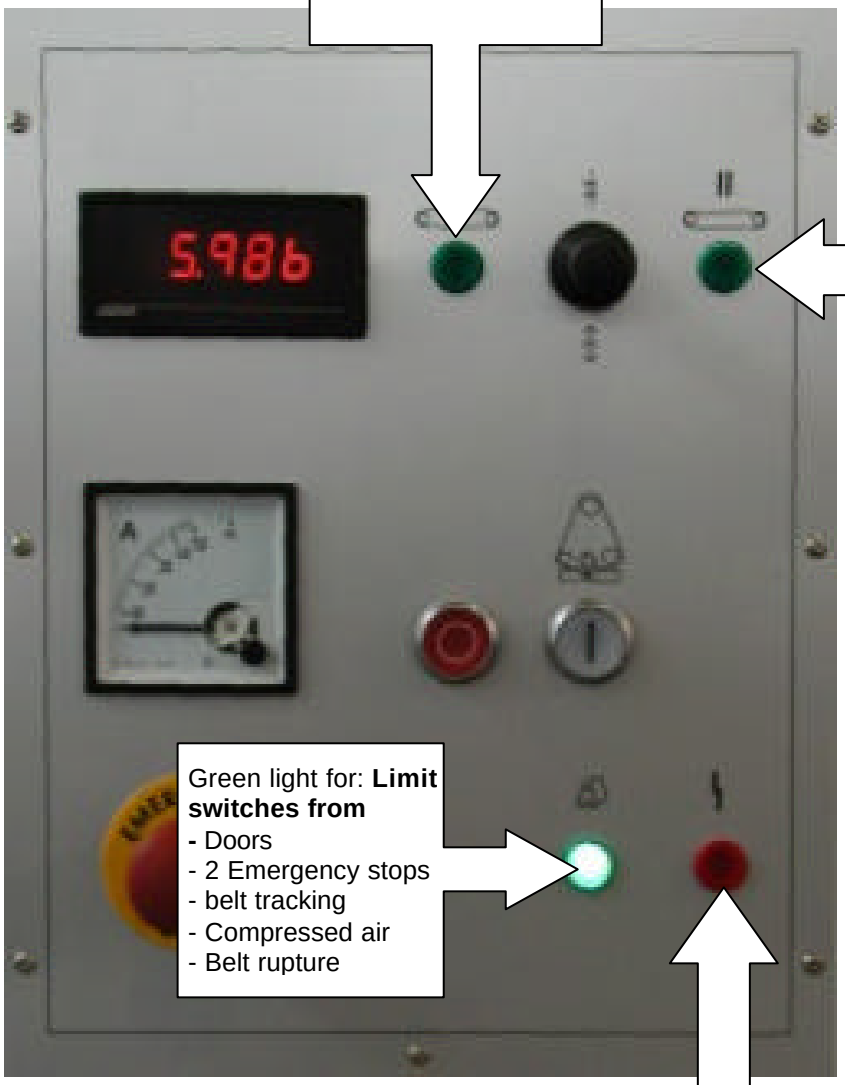
- Backside of machine
- Machine outfeed

6.2 Description of Operating Elements

6.2.1 Control Panel



Control Panel



6.2.2 Joystick

Moving lever 'UP' raises the table to **Reduce machine opening**

Lever to the left
Feed speed **1 on**

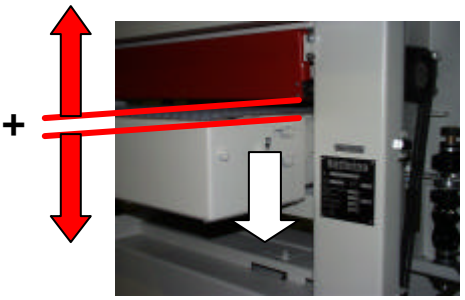
Lever to the right
Feed speed **2 on**

Moving lever 'DOWN' lowers the table to **Increase machine opening**

Lever 'UP'

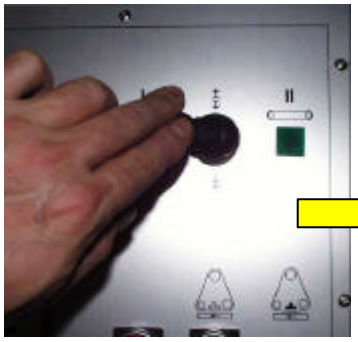
Feed table is raised to reduce machine opening

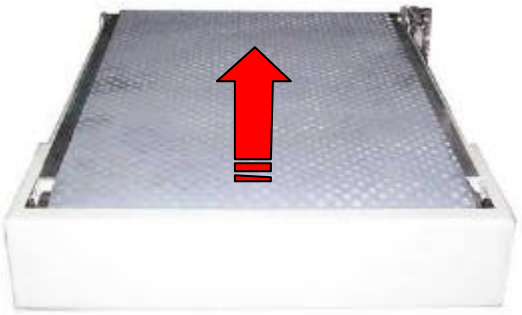
Lever 'DOWN'



Feed table is lowered to increase machine opening

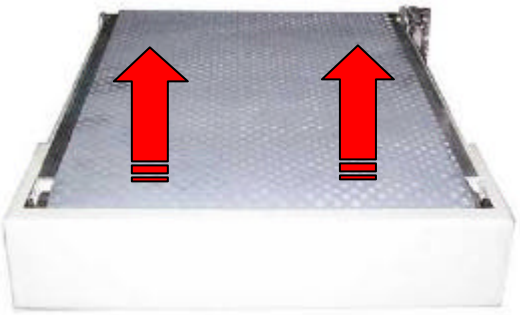
Lever to the left
Speed 1





Conveyorbelt speed **4 m/min / 13 ft/min.**

Lever to the right
Speed 2



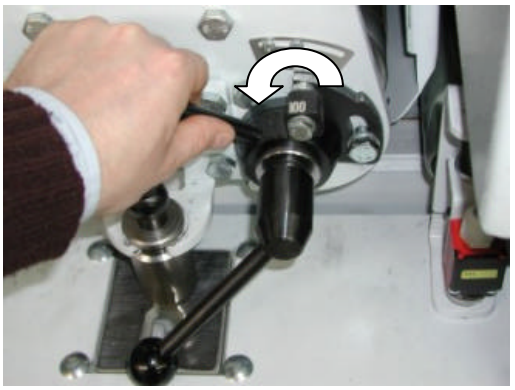
Conveyorbelt speed **8 m/min / 26 ft/min.**

6.3 Contact roller adjustment

6.3.1 Retracting the contact roller:

1. Undo the outboard clamping lever by rotating anti-clockwise

2. Rotate the inboard adjustment lever anti-clockwise to raise the contact roller

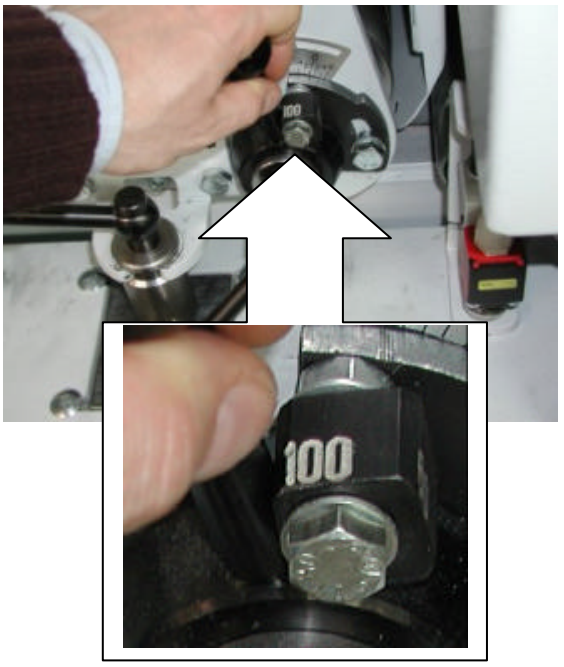


3. Re-tighten the outboard locking handle to lock the contact roller in the retracted position.

Lowering the contact roller – grit size compensation

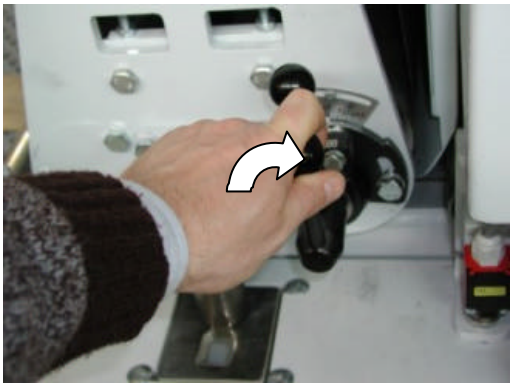
4. Undo the outboard clamping lever by rotating anti-clockwise

5. Adjust the abrasive belt grit size. Turn the ‘dice’ so that the chosen grit number will **contact the adjustment shaft.**



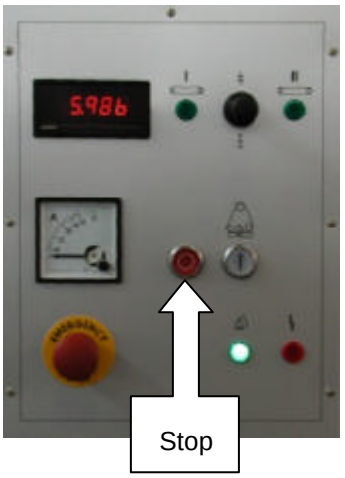
6. Press the Adjusting shaft against the ‘dice’.

7. Lock the height adjustment lever in place using the outboard clamping lever.



6.3.2 Changing of Sanding Insert

Safety Warning.
No fire, open light or smoking in case of risk of fire and explosion due to dust.



1. Ensure there are no workpieces in the machine

2. Stop drive motor
   (Operate stop button)

3. Switch off dust extraction

Danger "Stored Energy!

Safety Warning
Please note that parts remaining in the machine can be a risk even after switching off the drive motor.

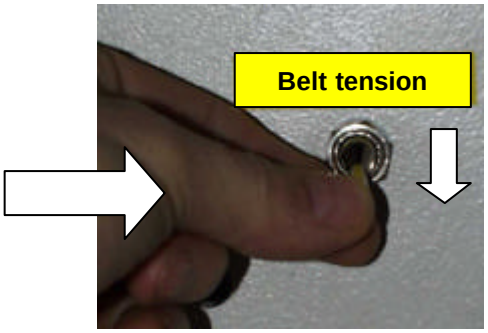
- Danger from the sanding head
- Danger of 'pinching' in conveyorbelt feed area

Risk of pinch points!

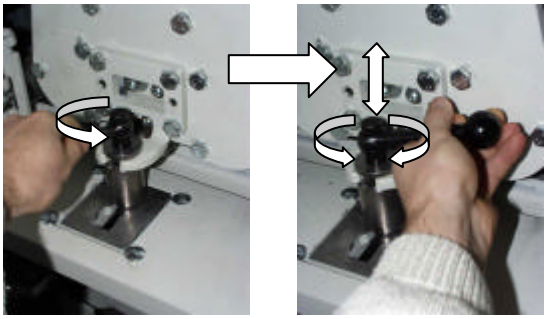
Wait until the machine has come to a complete stop and there are no workpieces in the machine.

- Only then open door on belt changing side.

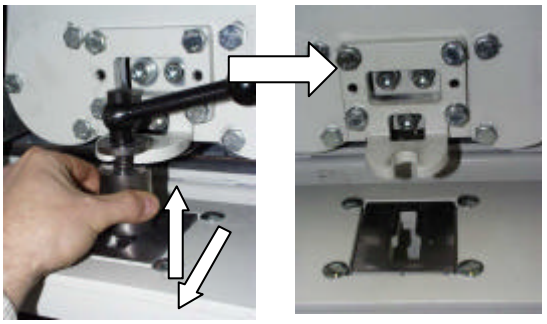
4. Release abrasive belt



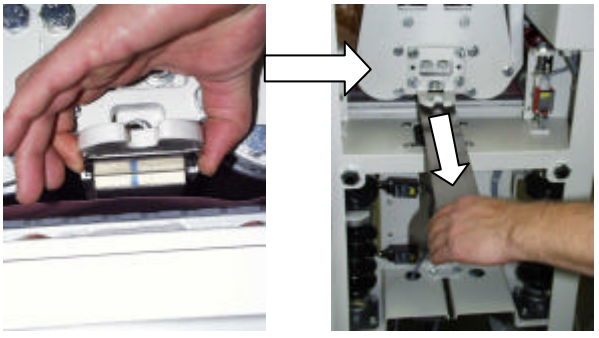
5. Release head support.
‘Fill Block’



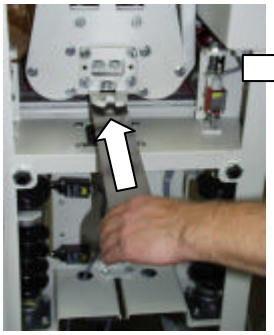
6. Pull out head support.

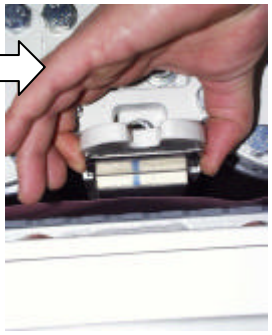


7. Take out sanding insert.



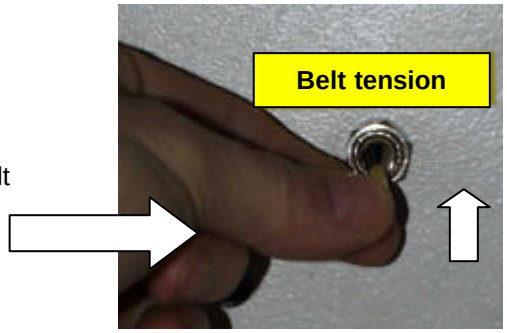
8. Then slide in new sanding insert carefully. (Please observe abrasive belt when replacing sanding insert)





9. Slide in sanding insert until limit stop.

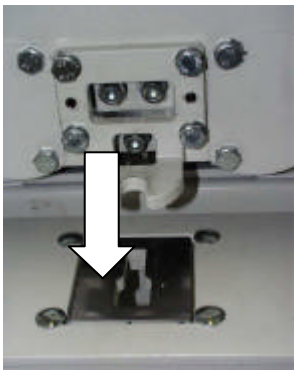
10. Tension abrasive belt



Attention!

Surface on **'Fill Block'** and **support surface on frame.**

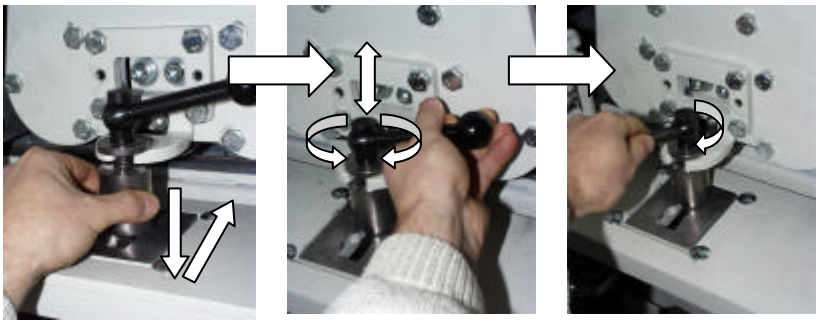
- **Needs to be cleaned.**



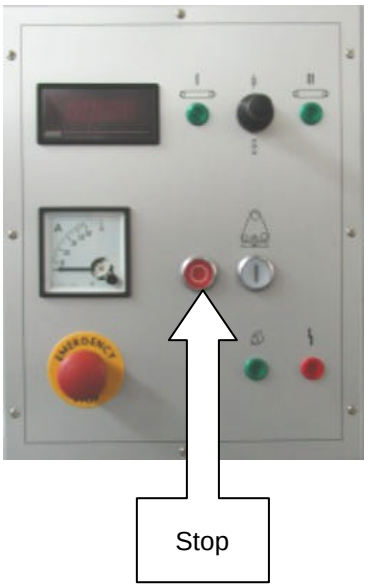
Clean surface on frame

Clean surface on 'Fill Block'

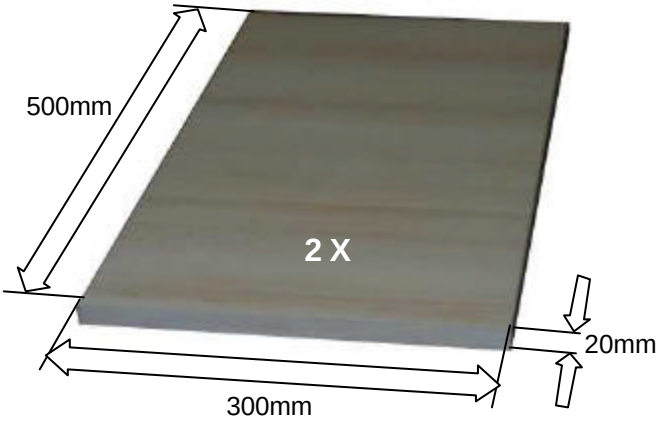
11. Push in 'Fill Block, align and fasten.



6.3.3 Contact roller for leveling towards sanding pad



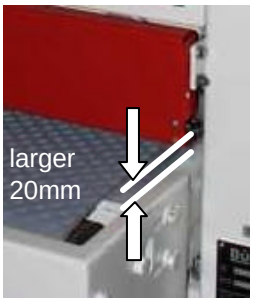
1. Stop feed.
   Stop abrasive belt drive.
   Operate stop button.



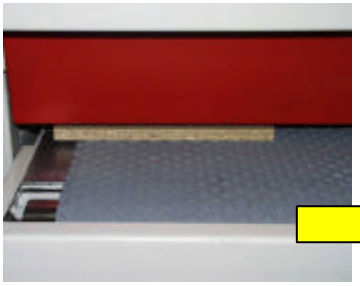
2. Select a **flat workpieces of 20 mm / 0,787 inch thickness**, approx. 500 mm/ 20 inch long and 300 mm / 12 inch wide.

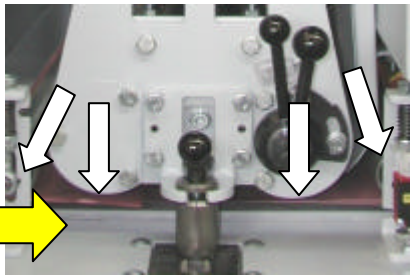
3. The sanding insert must be inserted and the contact roller must be retracted.

4. Joystick down. The feed table moves down. Lower the table so far so that the distance between the abrasive belt and conveyorbelt is larger than 20 mm/ 0,787 inch.



5. Push the workpiece on the left hand side of the feed table underneath the sanding head and pressure rollers.

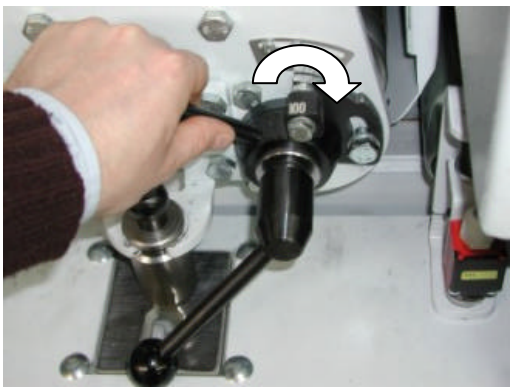




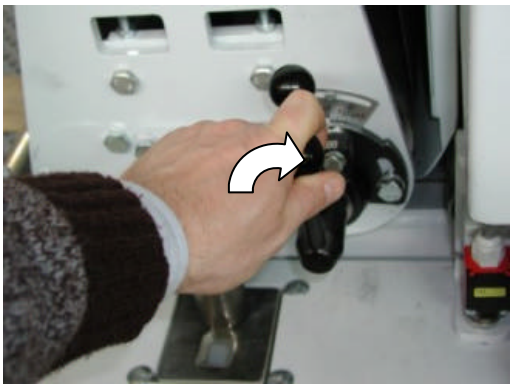
6. Lift joystick carefully, until the workpiece just touches the abrasive belt.

7. Release tension lever

8. Turn adjustment lever clockwise and lower contact roller onto the workpiece.



9. Fasten adjustment lever



10. Joystick down. Feed table lowers. Remove workpiece.

6.4 Starting the machine

Attention!
The contact roller needs to be upper position when sanding with the sanding pad only

Attention!

6.4.1 Sanding with Sanding pad only

1. Main switch on (wait until digital readout lights up)
2. Compressed air on.

1

2

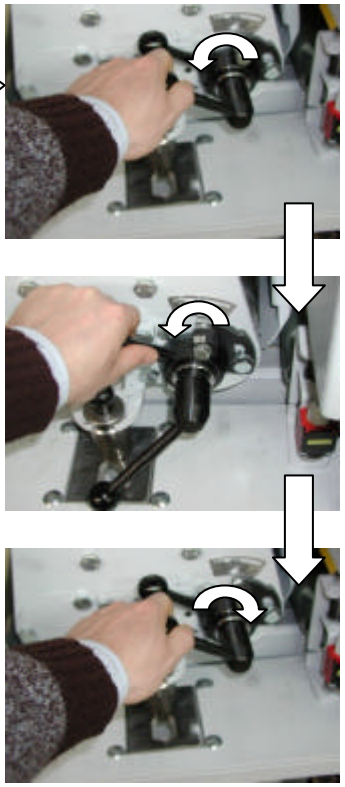
Check: Is sanding insert pushed in?

Has abrasive belt been fitted correctly ?
(Observe running direction)

Contact roller in upper position?

Fill Block fastened?

Abrasive belt tensioned?



Green control light for limit switch is on, when:

Emergency stop buttons OK

Belt over-travel switches OK

Compressed air OK

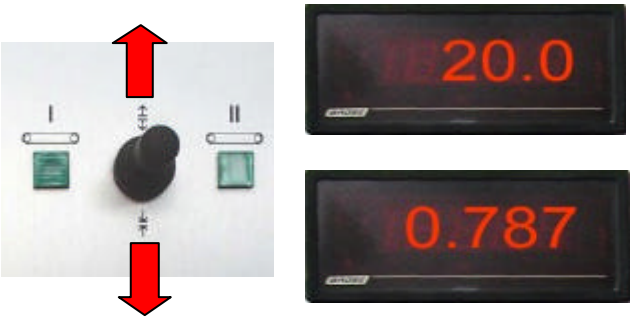
Abrasive belt tensioned OK

Doors Interlocks OK

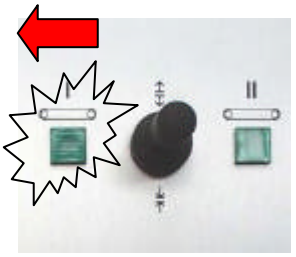
Limit switch

3. Adjust for workpiece thickness
(i.e. 20 mm / 0,787 inch)

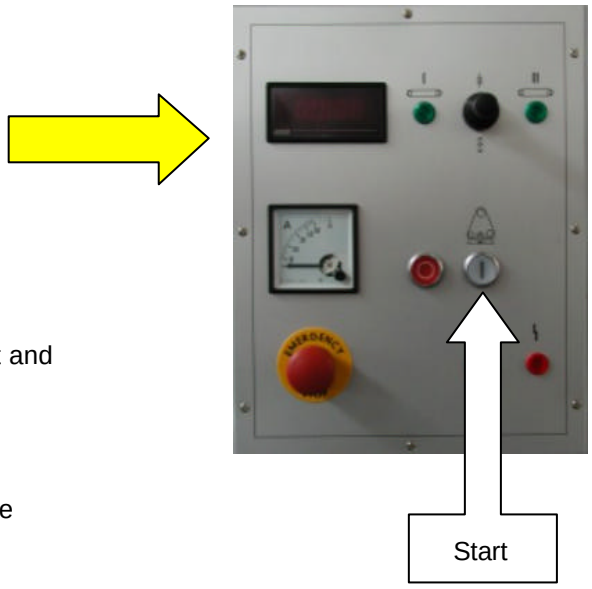
4. Operate joystick until digital readout indicates 20 mm (0,787 inch)



5. Operate joystick.
Select **feed speed 1.**
Green control light lights up.



6. Start sanding head.
Operate start button.



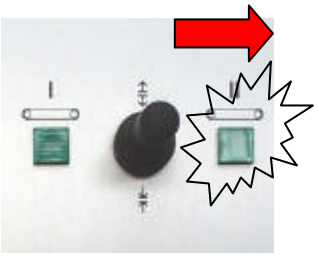
7. Switch on dust extraction.

8. Place workpiece on conveyorbelt and feed through machine

9. **Machine outfeed area 2** Remove workpiece

10. Check the workpiece.

11. If the workpiece is ok, then select 2nd feed speed

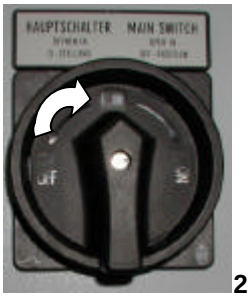


6.4.2 Sanding with Contact roller

Attention!

Attention!
Sanding with contact roller only without sanding insert!

1. Main switch on
   (wait until digital readout lights up)
2. Compressed air on.



1

2

Check:

Sanding insert removed?

Abrasive belt fitted correctly?
(Observe running direction)

Contact roller adjusted?

Fill Block fastened?

Abrasive belt tensioned?

Green control light for limit switch is on when:

Emergency stop buttons OK

Belt over-travel switches OK

Compressed air OK

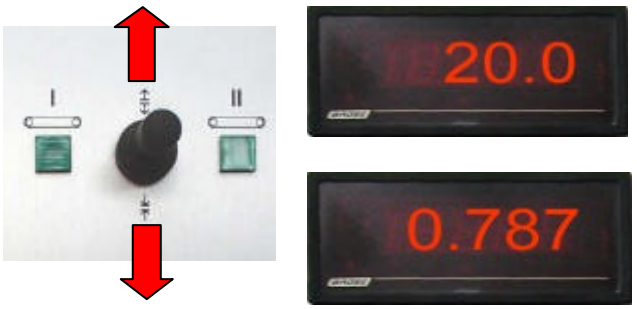
Abrasive belt tensioned OK

Doors Interlocks OK

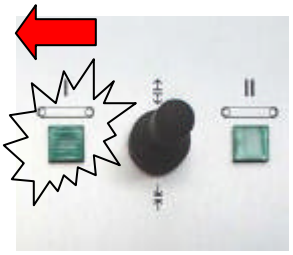
Limit switch

3. Adjust for workpiece thickness
(i.e. 20 mm / 0,787 inch)

4. Operate joystick until
digital readout shows **20 mm.**(0,787 inch)

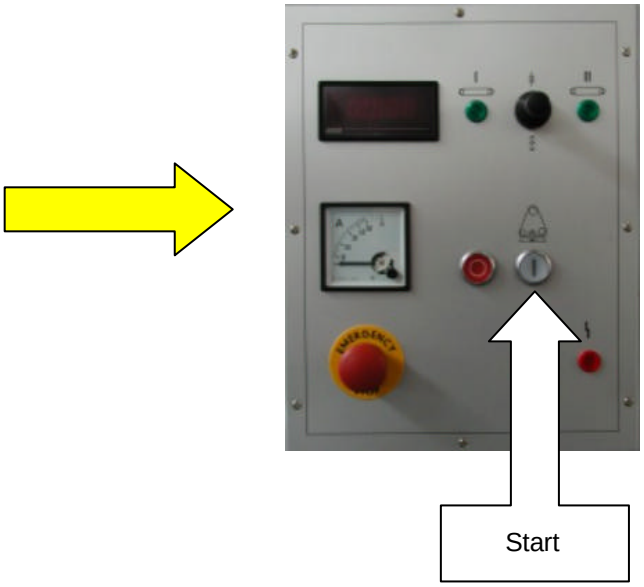


5. Operate joystick. Select feed speed **1.**
Green control light lights up.



5. Start sanding head.
Operate start button.

7. Switch on dust extraction.



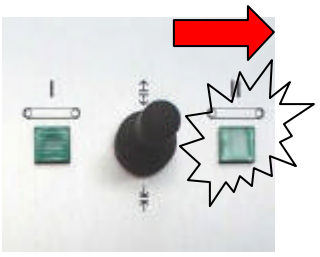
8. Place workpiece on conveyorbelt and feed through machine.

9. **Machine outfeed area 2** Remove workpiece

10. Check the workpiece.

11. If workpiece is ok, 2nd speed can be selected.

Speed 2



6.4.3 Combi-Sanding

Sanding with contact roller and sanding pad.

1. Main switch on
   (wait until digital readout lights up)

2. Compressed air on

Check: Is sanding insert pushed in?

Abrasive belt fitted correctly?
(Observe running direction)

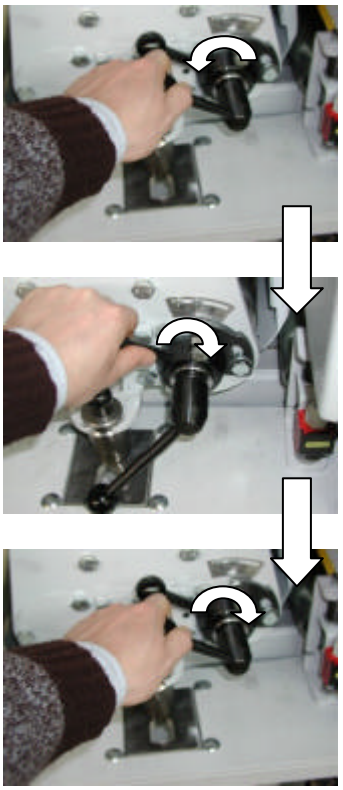
Contact roller levelled to
sanding pad?

Abrasive belt tensioned OK

Doors Interlocks OK

1

2



Green control light for limit switch is on when:

Emergency stop buttons OK

Belt over-travel switches OK

Compressed air OK

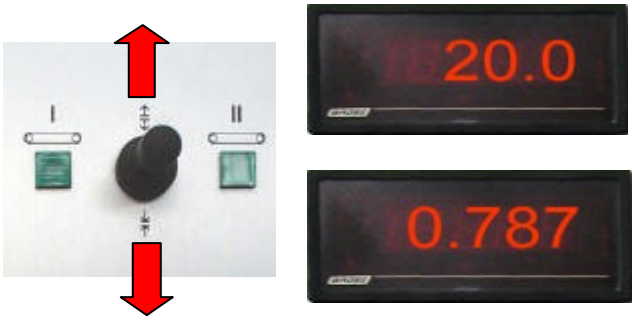
Abrasive belt tensioned OK

Doors Interlocks OK

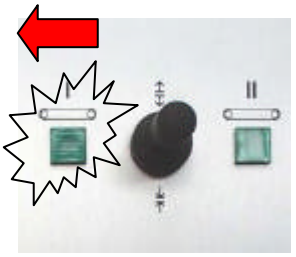
Endschalter

3. Adjust for workpiece thickness
(i.e. 20 mm / 0,787 inch)

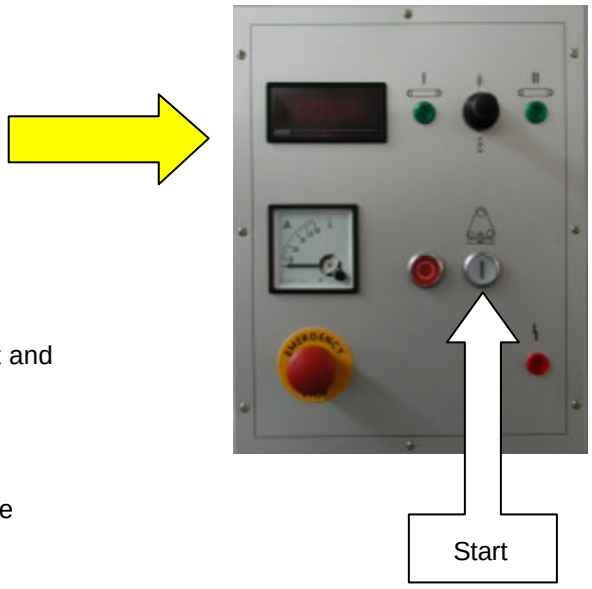
4. Operate joystick until digital readout indicates 20 mm (0,787 inch)



5. Operate joystick.
Select **feed speed 1.**
Green control light lights up.



6. Start sanding head.
Operate start button.



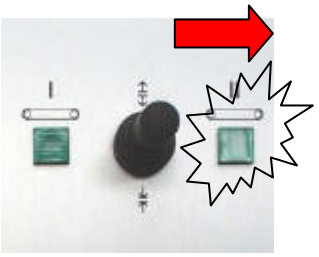
7. Switch on dust extraction.

8. Place workpiece on conveyorbelt and feed through machine

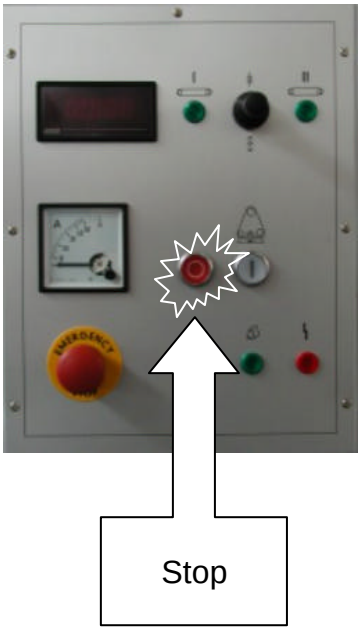
9. **Machine outfeed area 2** Remove workpiece

10. Check the workpiece.

11. If the workpiece is ok, then select 2nd feed speed



6.5 Stopping of Machine



1. Remove workpieces from the machine.

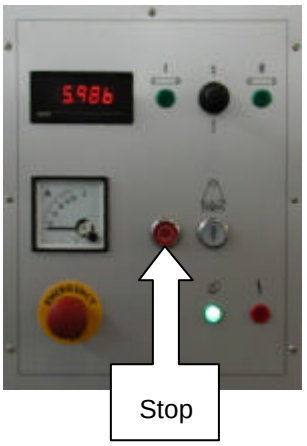
2. Operate stop button.

   Stop abrasive belt drive and conveyorbelt drive.

3. **Main switch and compressed air supply valve may only be operated, if the abrasive belt has come to a standstill, as otherwise the abrasive belt is no longer controlled.**

6.6 Changing of Abrasive belt.

Safety Warning.
No fire, open light or smoking in case of risk of fire and explosion due to dust.



1. Remove workpieces from the machine

2. Stop drive motor
   (operate stop button)

3. Switch off dust extraction

Safety Warning
Please note that parts remaining in the machine can be a risk even after switching off the drive motor.

- Danger from the sanding head
- Danger of 'pinching' in conveyorbelt feed area

Risk of stored Energy

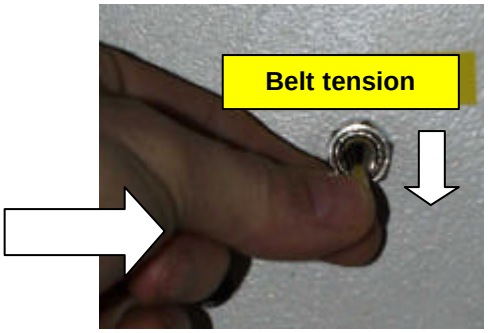
Wait until the machine has come to a complete stop and there are no workpieces in the machine.

- Only then open the door on the belt changing side

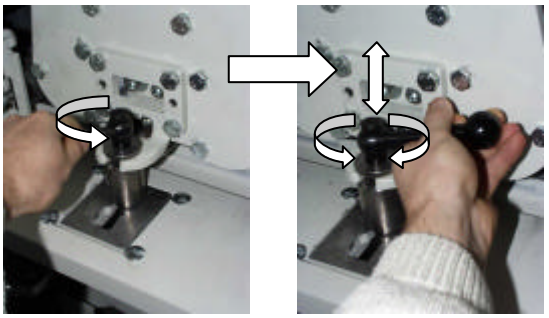
Risk of pinch points

4. Lower feed table. A value of at least **20 mm** will make belt changing easier.

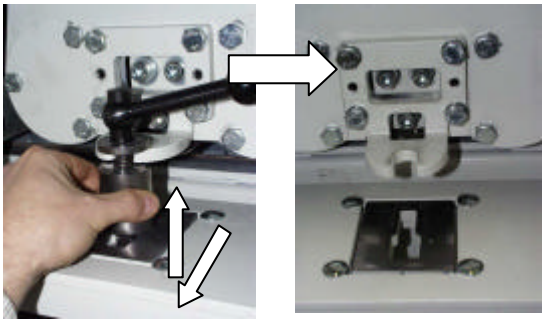
5. Release abrasive belt



6. Release Fill Block Clamping lever.

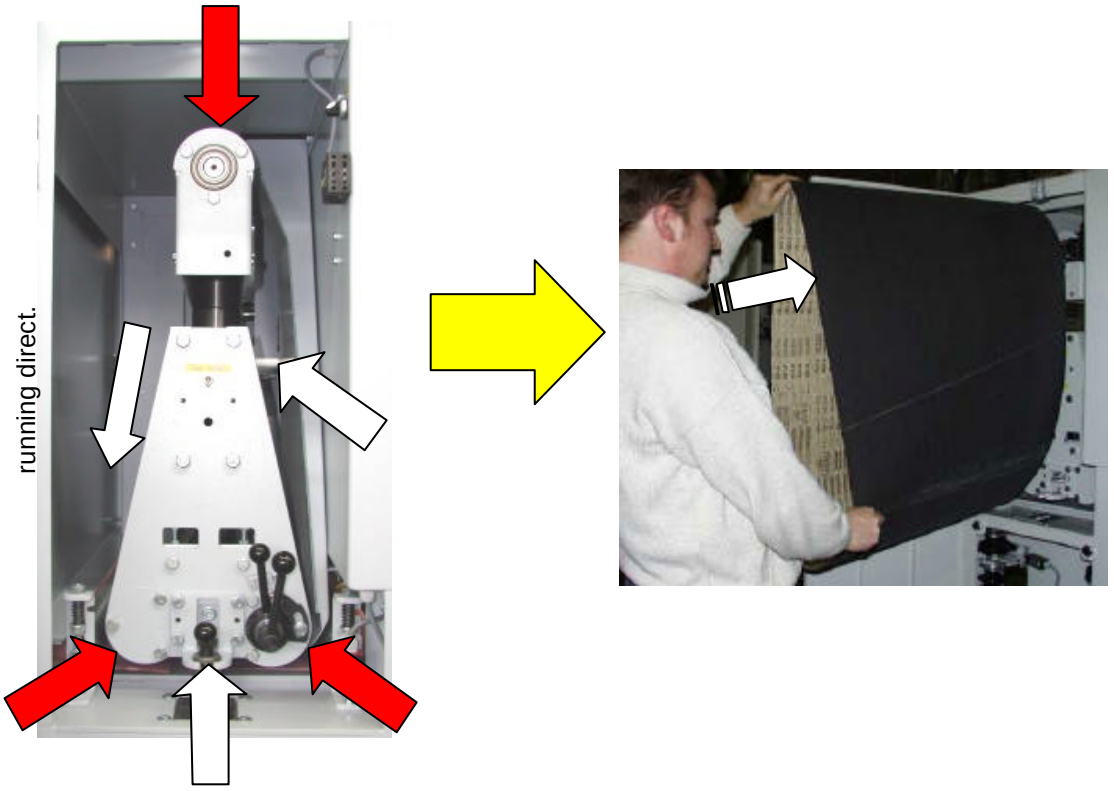


7. Pull out Fill Block.



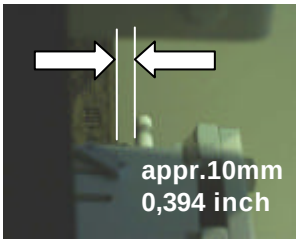
8. Remove abrasive belt

9. Place new abrasive belt carefully around the contact roller, idle roller and tension roller. (Be careful of the sanding insert 1 and belt running switch 2)

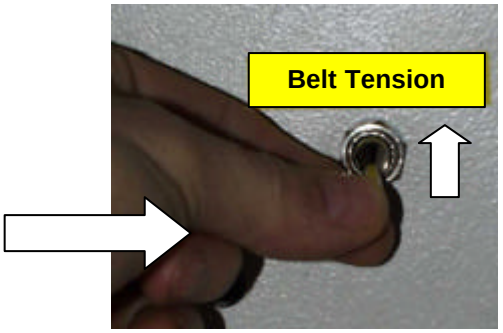


Attention!
Observe running direction of abrasive belt (see direction of arrow). Sanding direction is 'Against the feed'.

Attention!
Keep distance to belt running switch.



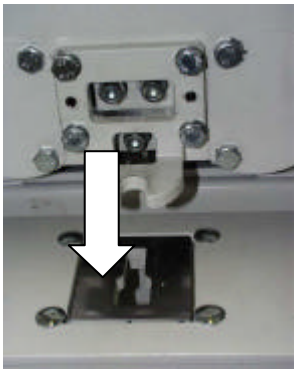
10. Tension abrasive belt



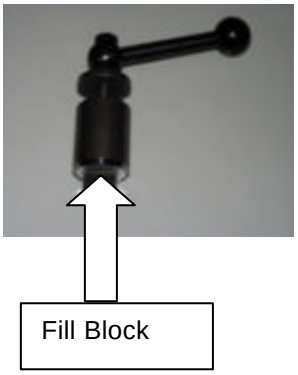
Attention!

Surface on **Fill Block** and **support surface on frame:**

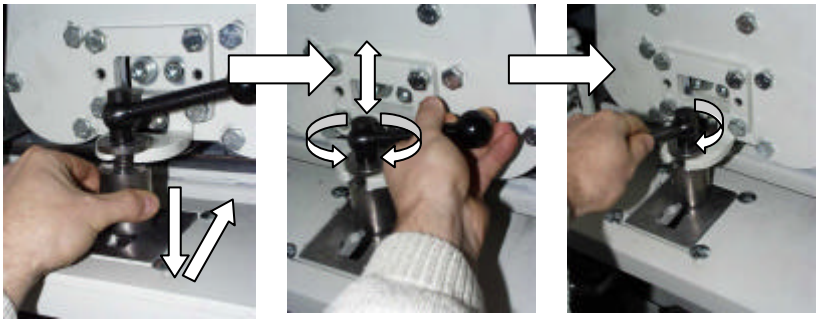
- **Always to be cleaned**



Clean surface on frame



11. Push in Fill Block, align and tighten clamping lever.



7 Adjustments.....2
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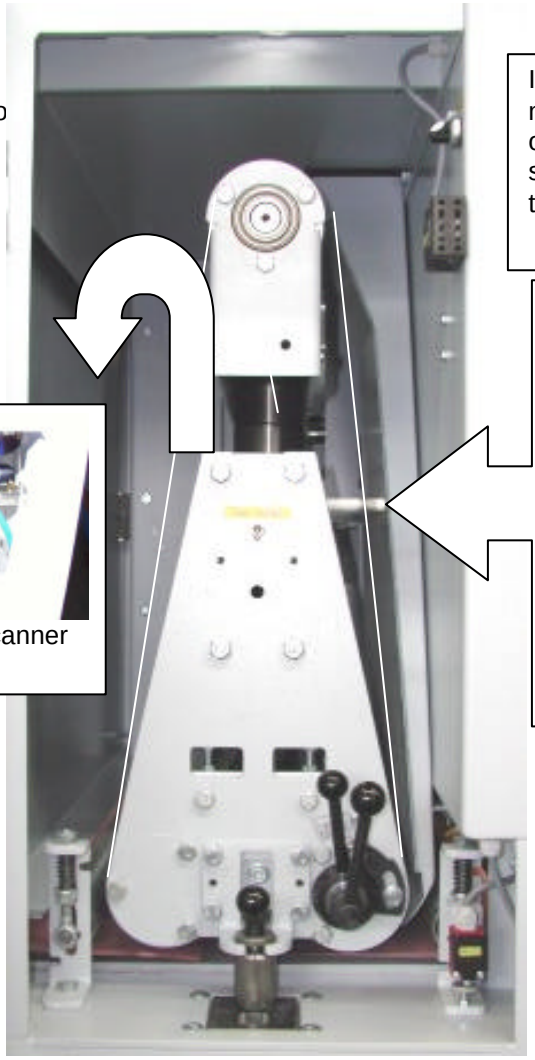
7 Adjustments

7.1 Abrasive belt oscillation

7.1.1 Sanding head – abrasive belt changing side

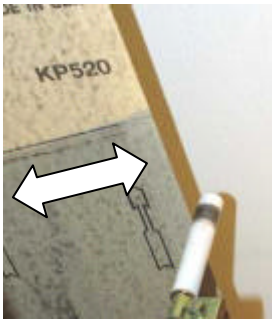
The abrasive belt oscillation system (tracking system) keeps the abrasive belt running centrally on the machine.

The oscillation movement is brought about by a Photo Eye Light Scanner, solenoid operated air valve and an air cylinder.
The Photo Eye has an integral time delay, to ensure that the system can cope with abrasive belts that have slightly damaged edges.



If the abrasive belt moves too far, the over-travel limit switch switches off the motor.

Photo Eye Light scanner in main frame



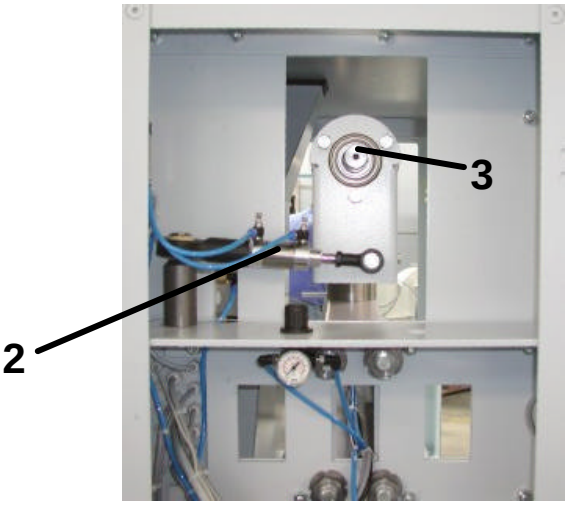
Abrasive belt oscillation and over-travel limit switch

7.1.2 Abrasive belt – drive side

The abrasive belts can have running differences depending on the supplier.

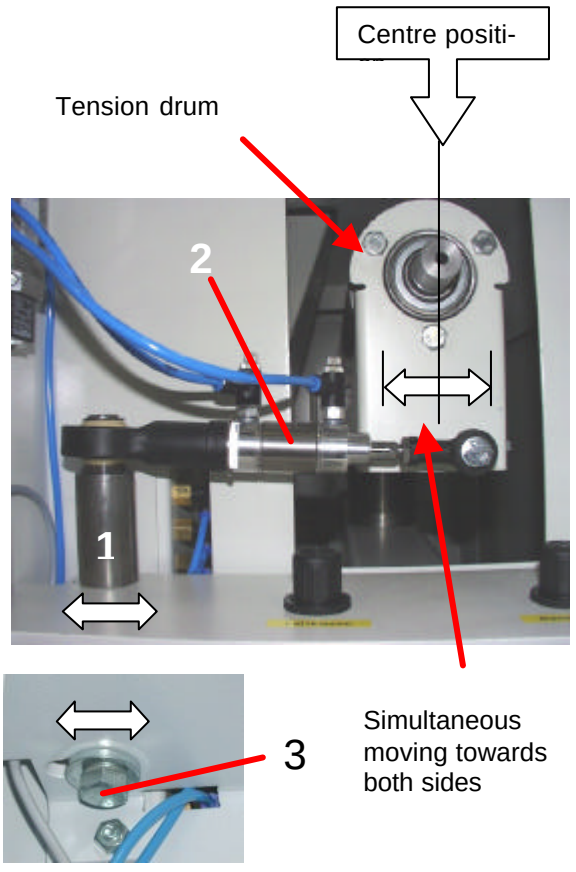
The abrasive belt oscillation can be adjusted, so that each abrasive belt will get a stable running movement.

- 2. Cylinder
- 3. Tension roller



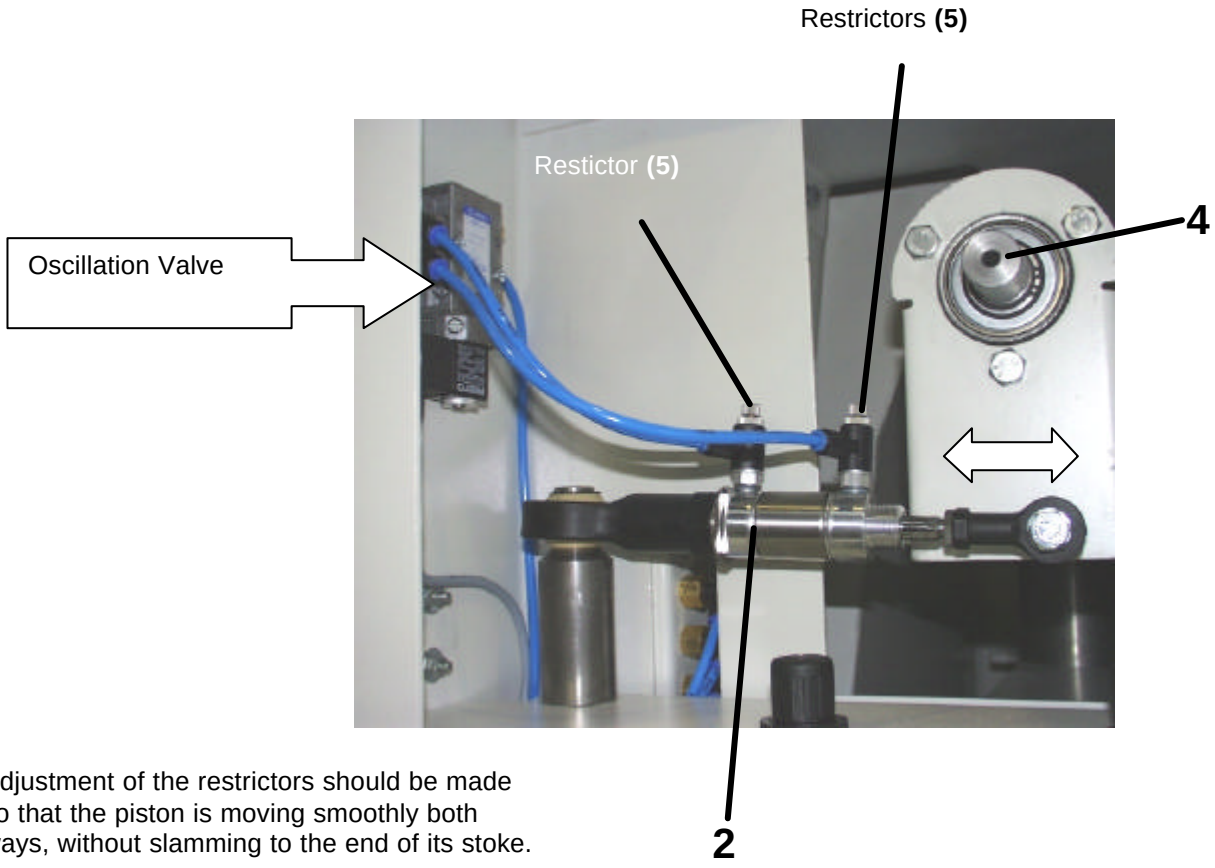
The centre position of the tension drum is adjusted with the mounting block (1) of the cylinder (2).

The mounting block can be moved to the left or right by releasing the bolt (3). This will modify the centre point, about which the tension roller will oscillate.



The cylinder (2) moves the tension roller (4) either to the left or right hand side.

Restrictors (5) control the speed of the piston, by regulating the airflow.



Adjustment of the restrictors should be made so that the piston is moving smoothly both ways, without slamming to the end of its stoke.

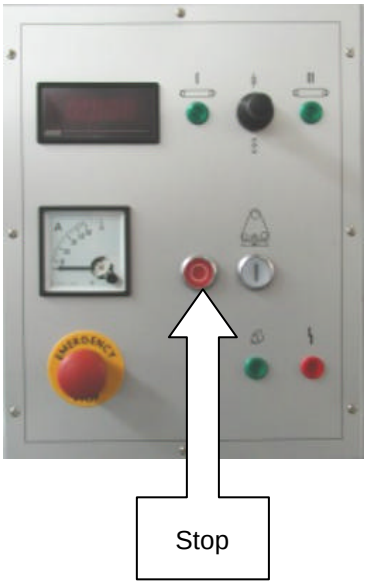
7.2 Conveyorbelt tensioning

The conveyorbelt tensioning is to be checked at regular intervals and re-tensioned if necessary to prevent the conveyorbelt slipping on the drive drum.

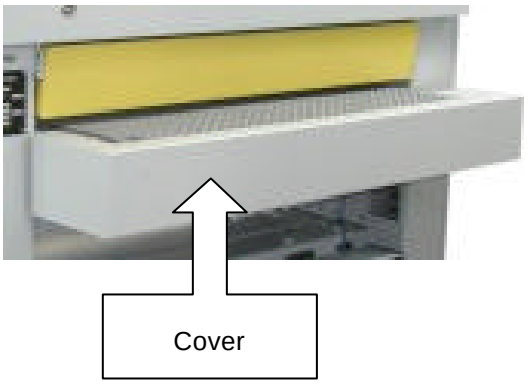
Attention!
The main switch has to be switched off and locked when adjusting the conveyorbelt.

Risk of pinch points

1. Remove workieces from the machine.

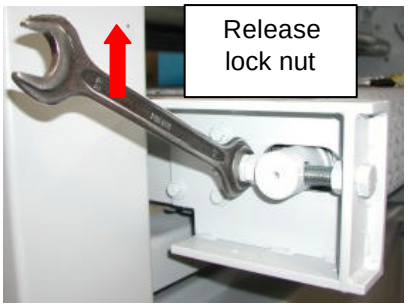


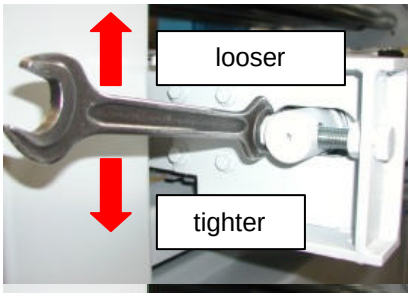
2. Stop conveyorbelt.
   Stop abrasive belt drive.
   Operate stop-button.



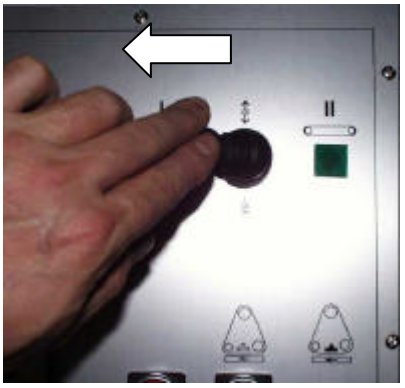
3. Remove cover.

4. Loosen lock nut and tighten conveyor-belt with tensioning nut.

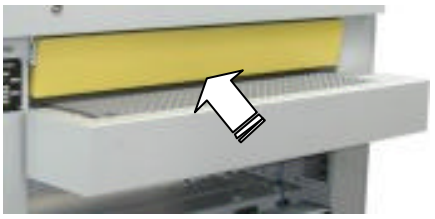




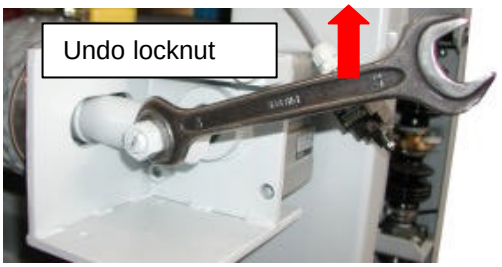
5. Select feed speed 1 for checking of tracking.

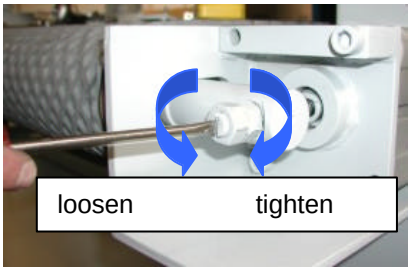


6. Observe conveyorbelt tracking.

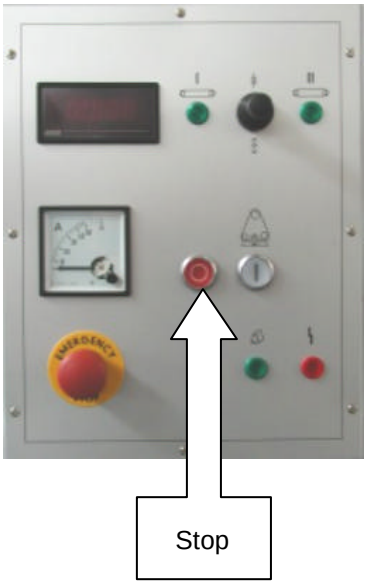


7. Undo locknut and re-tension conveyorbelt with tension screw.

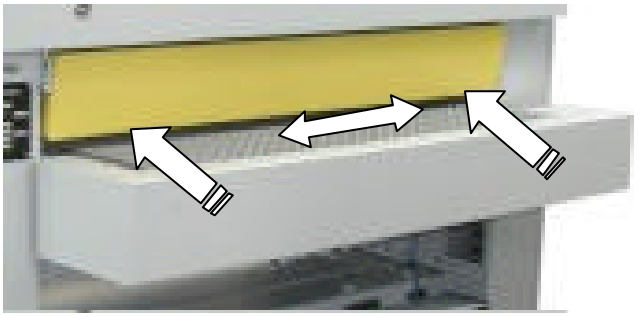




8. Stop feed.

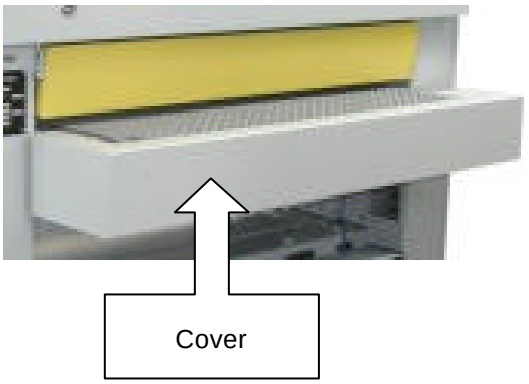


9. If the conveyorbelt is mistracking, correct by adjusting the tension at the left or right.



10. Repeat points 4 to 8 until the conveyorbelt tracking is correct again.

11. Replace the cover.

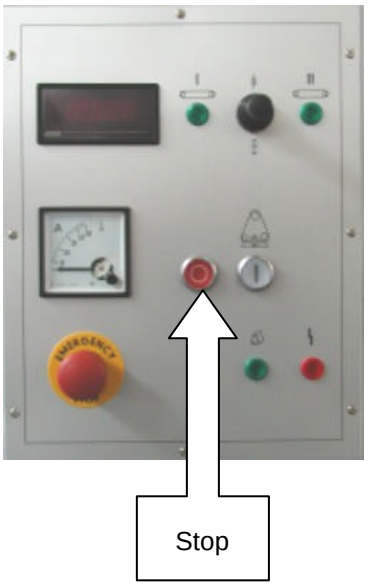


7.3 V-belt tensioning

The V belt tension is to be checked at regular intervals (50 operating hours) and re-tensioned if necessary in order to avoid slipping of the V-belt on the V-belt pulley.

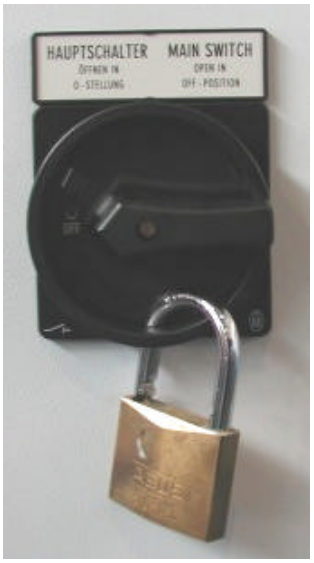
Replace worn V-belts.

1. Remove workpieces from the machine.

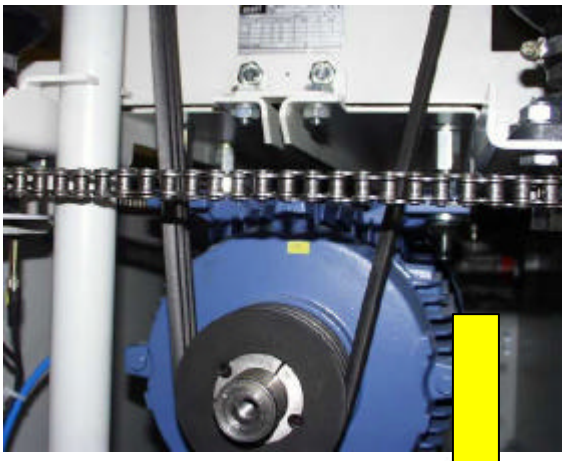


2. Stop feed.
   Stop abrasive belt drive.
   Operate stop button.

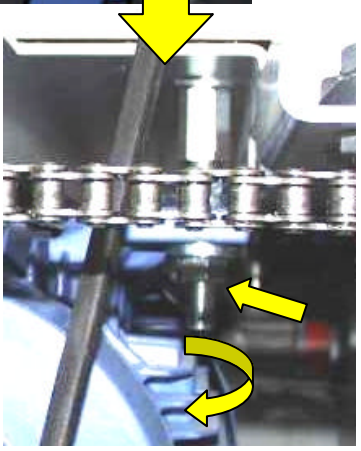
3. Main switch in Off- position, and lock in the off position.



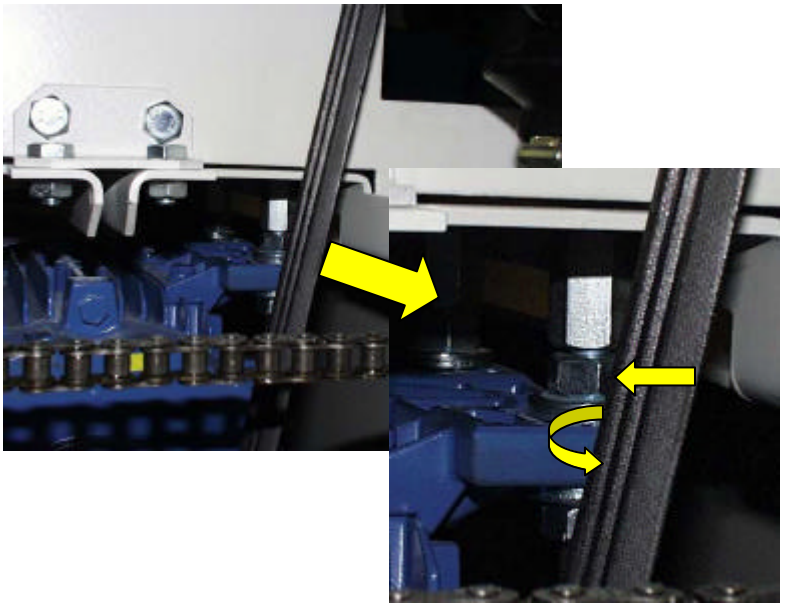
4. Open the door on the drive side.



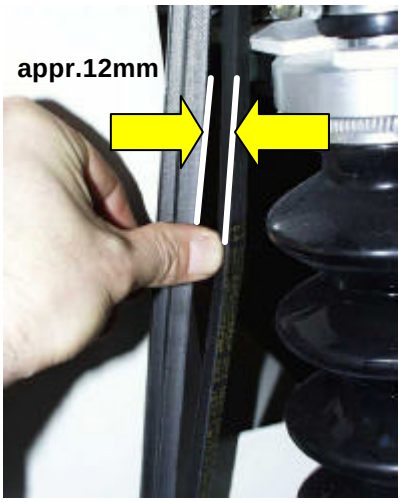
5. Release four counter nuts on bottom of motor.



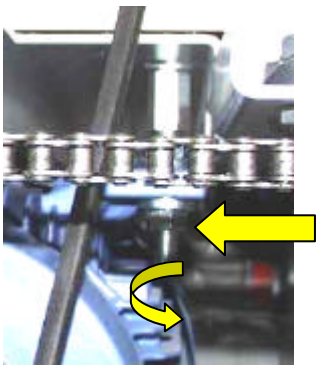
6. Move the motor down with the 4 tension nuts to tension the V-belts.



7. The correct V-belt tension is when the belts can be deflected by approximately **12 mm** /**0,5 inch** between the V-belt pulleys.



8. Tighten the locking nuts securing the motor.



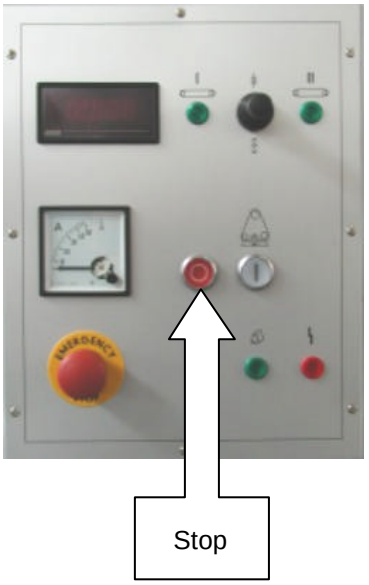
7.4 Setting up Thickness adjustment

Electrical Hazard

This adjustment should only be carried out by an electrician.

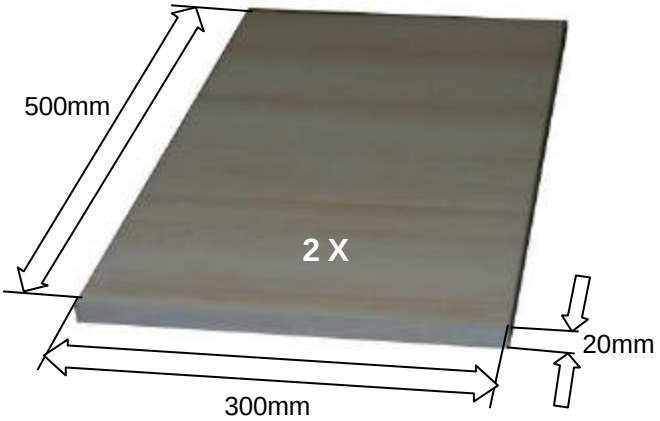
If the sanded dimension does not agree with the value of the digital readout, the thickness adjustment and digital readout need to be set up.

1. Stop feed.
   Stop abrasive belt drive.
   Operate stop button.



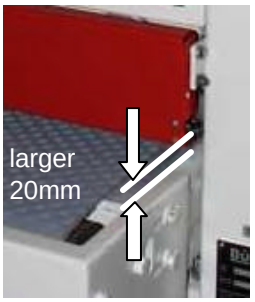
2. Open the door on the abrasive belt changing side and put on a grit size 150. (see chapter abrasive belt change)

3. Select a **flat workpieces of 20 mm / 0,787 inch thickness**, approx. 500 mm/ 20 inch long and 300 mm / 12 inch wide.

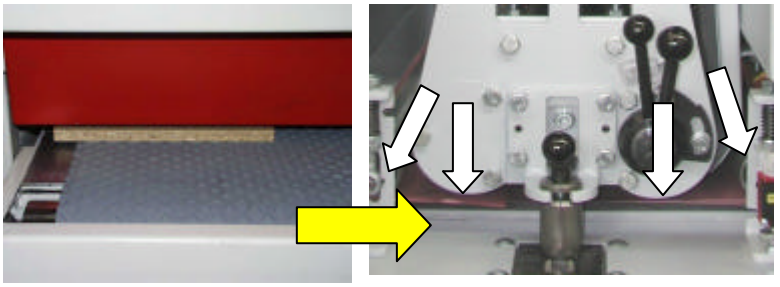


4. The sanding insert must be inserted and the contact roller must be retracted.

5. Joystick down. The feed table moves down. Lower the table so far so that the distance between the abrasive belt and conveyorbelt is larger than 20 mm /0.787inch.

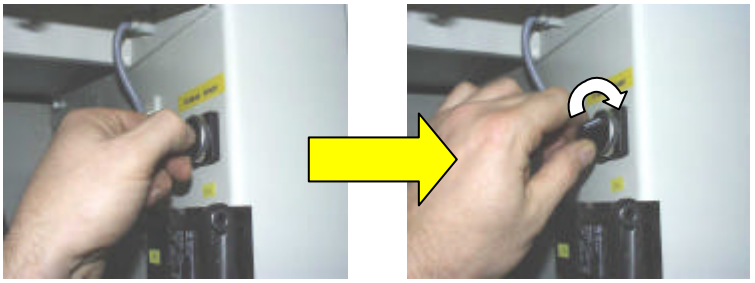


6. Push the workpiece on the left hand side of the feed table underneath the sanding head and pressure rollers.

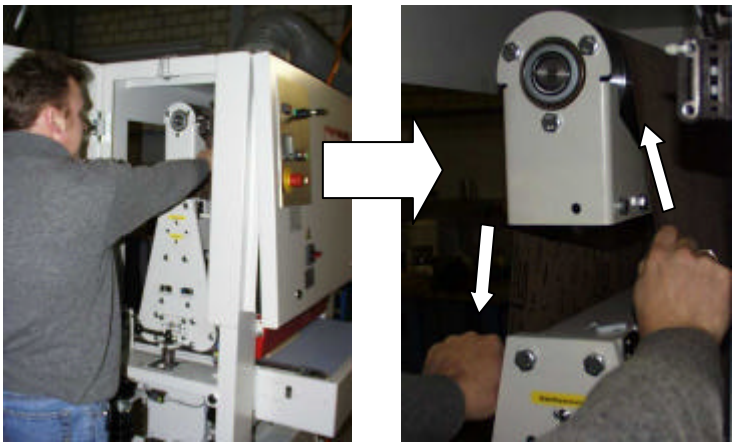


7. Lift joystick carefully, until the workpiece just touches the abrasive belt.

8. In order to move the abrasive belt.
Release motor brake.



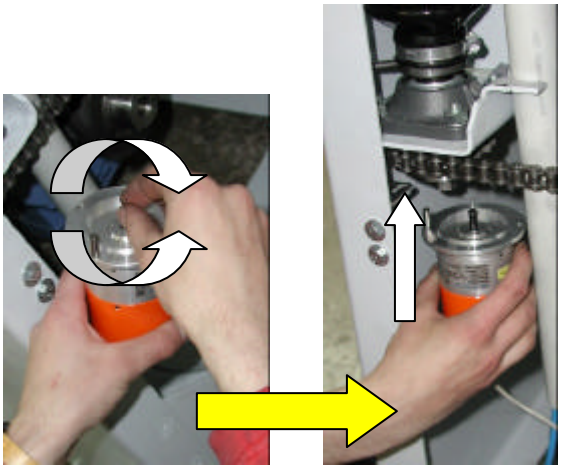
9. The abrasive belt must be drawn over the workpiece by turning the tension roller by hand. Only moderate force is needed.



10. Open the door on the drive side.

11. Unlock the set screw locking the axel of the encoder to the table spindle. Lower the encoder.

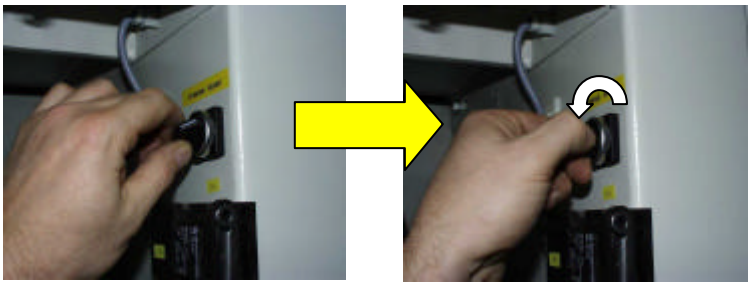
12. Adjust the digital LED to the required value by turning the encoder shaft.



13. Re-install the encoder, and tighten the set screw.

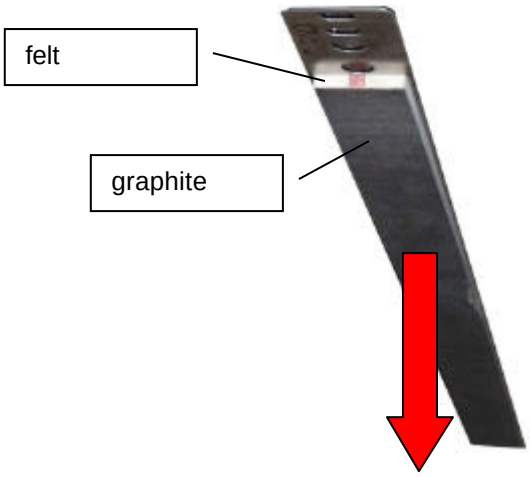
14. Joystick down. Feed table lowers. Remove workpiece.

Attention!
The motor brake is to be activated after this procedure.
If it is not the abrasive belt mainmotor cannot be started.



A new adjustment may become necessary, if an abrasive belt of a different make is fitted, as different makes can have thickness variations.

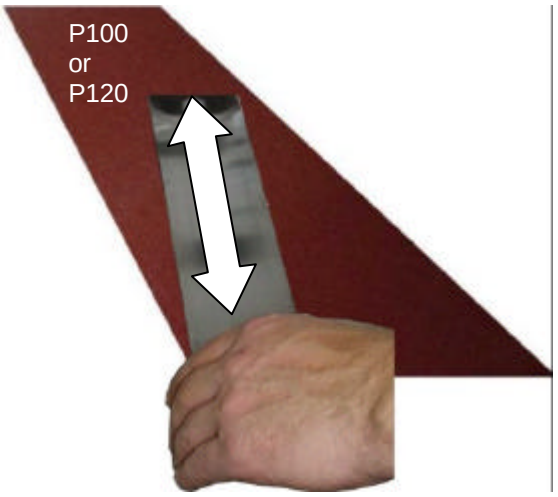
7.5 Sanding inserts of different hardnesses



The sanding insert is available with felts of a different hardness.

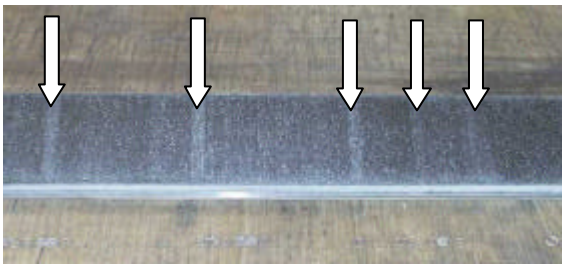
- Medium hard felt (0,5)
- Hard felt (0,68)

7.6 Sanding insert in use



If narrow rails and large surface workpieces are sanded frequently, the use of separate sanding inserts is recommended.

Narrow rails will eventually damage the graphite surface, and this may otherwise cause lines when sanding wider parts.



Graphite surface shows ‘tracking lines’.

8 Care and Maintenance 2
8.1 Lubrication 2
8.1.1 Drive motor 2
8.1.2 Motorised gearboxes 3
8.1.3 Table Spindles 3
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8 Care and Maintenance

8.1 Lubrication

Only proper maintenance ensures the correct performance of the Wide Belt Sander

Danger!
The main switch is to locked in the Off-position when carrying out maintenance work.

8.1.1 Drive motor

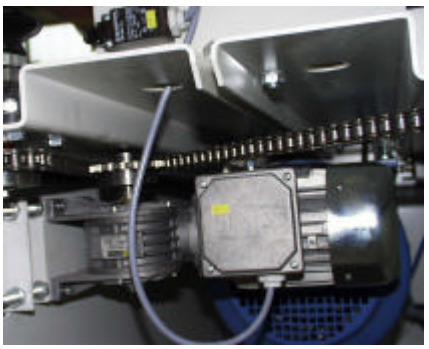
The roller bearings of the drive motor for the sanding head are to re-filled with new lithium based grease, Type K3N according to DIN 51825 with consistence 3 after 10.000 operating hours.

Maintenance of brakes
A disc brake is installed in the drive motor. The brake linings are to be replaced if they cease to function correctly.

This maintenance should only be carried out by an electrician.

8.1.2 Motorised gearboxes

The motorised gearboxes for the conveyor drive and for the table height adjustment are factory filled with long life oil for maintenance-free operation.



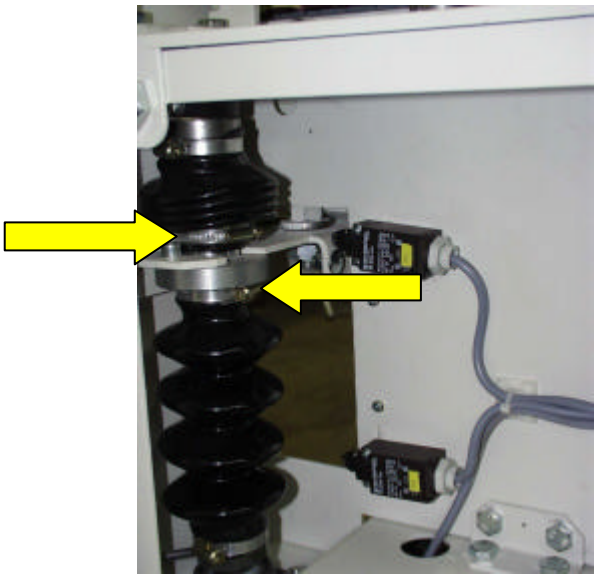
Geared motor for thickness adjustment

Feed geared motor

8.1.3 Table Spindles

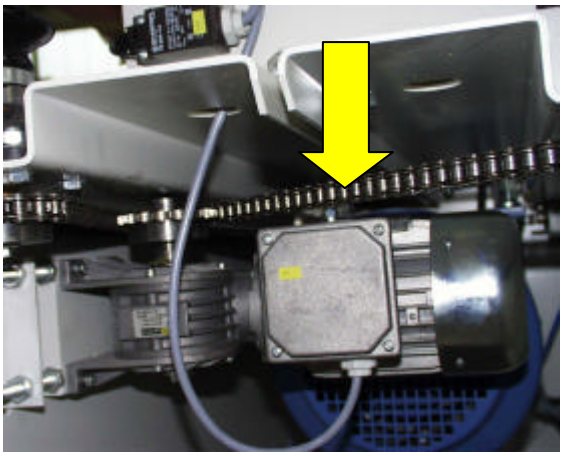
The threaded spindles can be clean and greased if necessary. All hose clamps / jubiliee clips are to be released for this.
Lubrication interval is once per year with

- Aral grease HL 2
- BP Energrease LS 2
- Esso Beacon 2
- Mobil Mobilux grease No.2
- Shell Alvania grease 2



8.1.4 Roller chain

The height adjustment chain is to cleaned monthly and inspected.



All other bearings points are equipped with a long life lubrication

8.2 Cleaning

Only proper maintenance ensures the correct performance of the Wide Belt Sander

Danger!
The main switch is to locked in the Off-position when carrying out maintenance work.

The machine has to be cleaned of dust every day.

Danger

The cleaning of the machine may not be done with compressed air.
Risk of injury by parts being blown around

8.2.1 Dust on Rollers

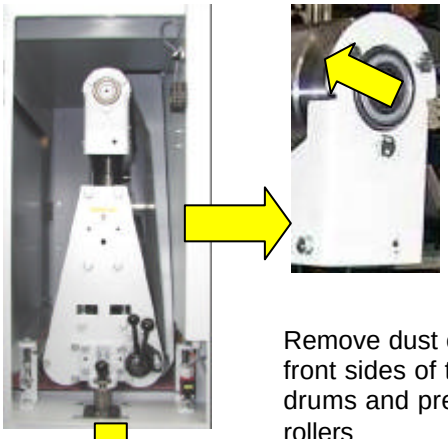
A build up of dust will cause an imbalance on the rollers.

Consequence:

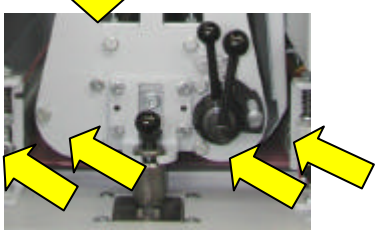
- Vibration in the machine
- 'Thumping' of abrasive belts
- Marks on the workpieces

The **front sides** of the contact roller, tension drum, idle roller and pressure rollers have to be cleaned carefully.

No smoking



Remove dust on the front sides of the drums and pressure rollers

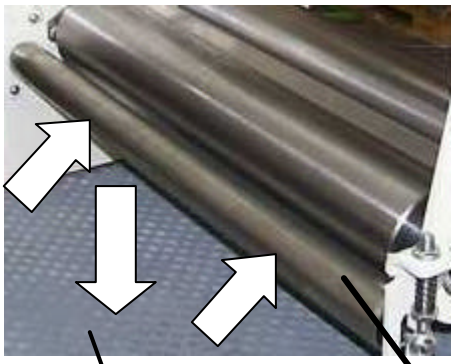


8.2.2 Dust on conveyorbelt

If the conveyorbelt is dusty parts may slip and not be transported through the machine correctly.

Dirty pressure rollers can cause scratches and drag marks.

Clean the conveyorbelt and pressure rollers daily.

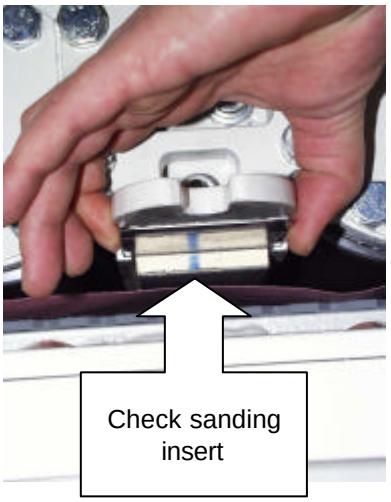


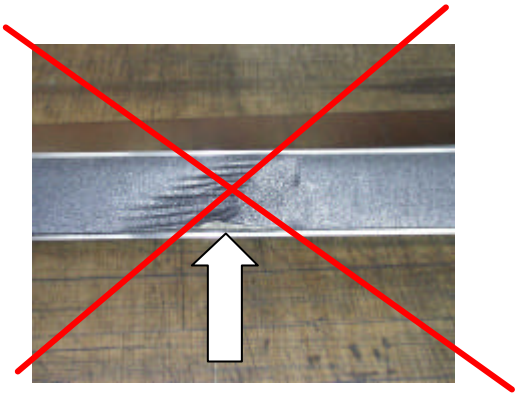
8.2.3 Dust on sanding pad

Check the sanding pad at least once a day.

Check the graphite for damage. Clean sanding insert from dust.

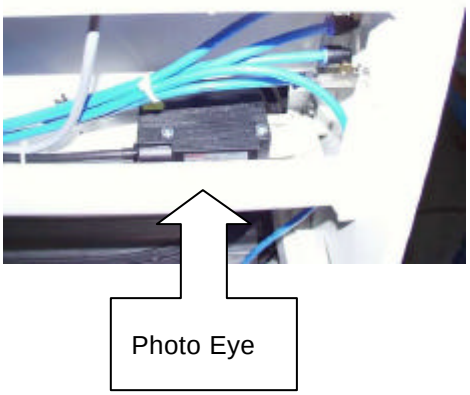
Clean sanding insert





Check for damages.

8.2.4 Photo Eye – Light Scanner



The Photo Eye is used to sense the position of the abrasive belt, and control its oscillation.

- Clean daily.
- clean when changing the abrasive belt

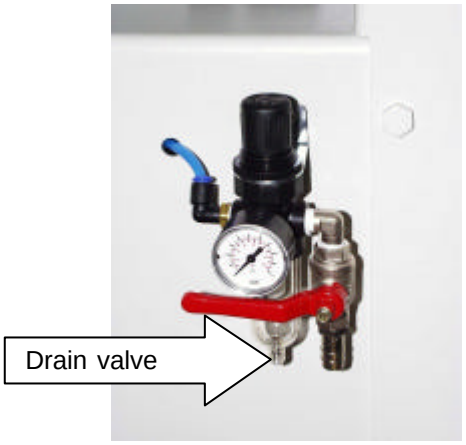
Checking the Photo Eye

- Cover the lens with thick paper

Effect: The cylinder moves the tension roller.

8.2.5 Pressure regulator

Check the container of the compressed air filter daily for water. Drain when necessary. An additional water separator has to fitted if there is excessive water in the compressed air system.



8.3 Care

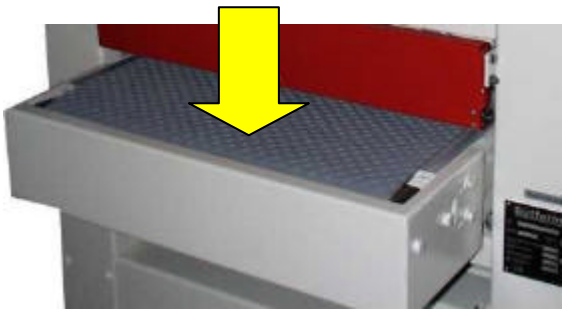
Only proper maintenance ensures the correct performance of the Wide Belt Sander

Danger!
The main switch is to locked in the Off-position when carrying out maintenance work.

8.3.1 Conveyorbelt

In order to prevent hardening of the conveyorbelt, it has to be protected against direct exposure to UV-radiation, artificial light, and influence of oils, grease, chemicals (lacquer mist) and ozone.

If the belt is not used, it should be covered with plates impervious to light at the infeed and outfeed area of the machine.



The surface of the belt is cleaned with a clean cloth, moistened with washing-up liquid or spirit.

No fire, open light and smoking due to fire and explosion risk when using combustible cleaning material.

9 Faults 2
9.1 Troubleshooting 2

9 Faults

9.1 Troubleshooting

Even when following the operating instructions, a fault can still occur, affecting the machine performance or function. The following table should help to troubleshoot more quickly.

Faults	Possible Cause	Action
Drive motors do not start	Emergency stop button pushed in.	Pull out Emergency Stop button.
	Compressed air supply missing or shut-off valve not opened	Switch on compressed air
	Main switch in off-position	Turn Main switch to On-position
	Motor protection thermal overload triggered after overload	Re-set motor protection thermal overload manually.
	Abrasive belts not tensioned	Tension abrasive belt
	Doors open	Close doors
Machine switches off during sanding	Air pressure or volume too low, pipe cross-section too small	Check air supply or use larger cross section
	Cartridge in air inlet filter is dirty	Clean cartridge or exchange
Abrasive belt drive motor does not start or switches off again immediately	Belt over-travel limit switch is operated, belt was not placed properly	De-tension belt and place it in the correct position
	Abrasive belt is too wide and constantly activates the over-travel limit switch	Use the right size abrasive belts
	Abrasive belt is too long, belt rupture limit switch is operated	Use the right size abrasive belts

Fault	Possible cause	Action
	Belt rupture limit switch has not been adjusted correctly and is therefore operated	Adjust switch
	Belt rupture limit switch is operated, as belt is not fitted or not tensioned	Place abrasive belt and tension
Abrasive belt drive motor or abrasive belt stop during sanding	Drive motor is overloaded, as stock removal is excessive	Reduce stock removal
	Feed speed is adjusted too high in relation to the workpiece width	Reduce feed speed
	Abrasive belt worn or abrasive belt with a too fine grit is being used	Use new belt or coarser belt
	V-belts do not transmit drive correctly, as they are loose or worn	V-belts to be tensioned or renewed
Abrasive belt tears during operation	Main switch was brought into off-position before machine came to complete stop	Wait for the machine to come to a complete stop before switching Main switch off.
	Belt was damaged during loading, edge was ripped before	Damaged belts should not be used
	Pneumatic belt tension too high	Reduce tension pressure
	Belt joint was badly glued	Replace the abrasive belt
	Inconsistent air pressure supply	The machine needs a constant air pressure supply
	Abrasive belt oscillation system has failed	Check the oscillation system

Fault	Possible cause	Action
Abrasive belt oscillation system fails	Air pressure or air volume is too low for control	Check, ensure consistent 6 bar is fed to the machine.
	Pressure regulator is defective	Check regulator, and replace if necessary
	Photo eye Light sensor defective or dirty	Check and clean light sensor, replace if necessary
	Solenoid valve is defective,	Replace solenoid valve
	Air cylinder is leaking air	Replace cylinder or seals
Feed drive switches off	Safety switch bar has been operated by workpiece or by hand	Check function
	Drive motor was overloaded by excessive stock removal	Reduce feed speed or stock removal
Workpiece surface has been sanded too much	Feed speed too slow	Increase feed speed
	Abrasive belt grit size too rough	Use a finer abrasive belt
	Sanding pressure too high	Reduce sanding pressure
Workpiece surface has been sanded too little	Feed speed too fast	Reduce feed speed
	Abrasive belt grit size too fine	Use a coarser abrasive belt

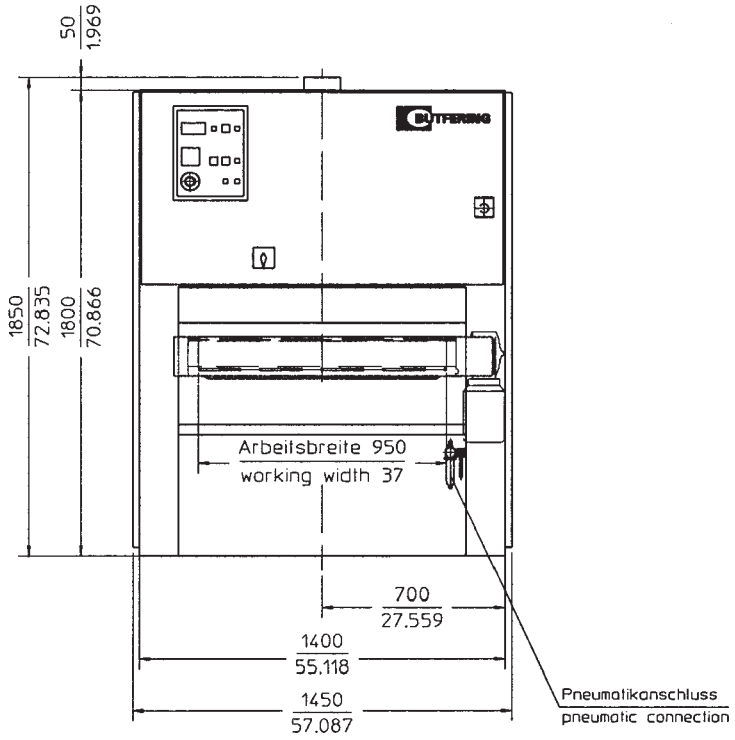
Fault	Possible Cause	Action
Sanded surface shows marks in line with the feed direction	Abrasive belt is partly worn or clogged with sanding dust	Replace abrasive belt
	Felt or graphite of sanding pad is damaged in places	Replace or dress felt and graphite
	Abrasive belt is wavy, was not de-tensioned after use	Replace abrasive belt, and de-tension when not in use
	Abrasive belt tension too high, creases occur under high humidity conditions	Reduce pressure
Sanded surface shows marks across the direction of the feed	Belt joint is too thick or free of grit	Use different abrasive belt
	Abrasive belt is 'thumping' possibly due to an imbalance in the contact roller or idle roller	Check contact roller, clean idle roller and check for possible bearing problems
Sanded surface shows transverse marks at irregular intervals	Workpieces are slipping on the conveyorbelt	Clean conveyorbelt. Check machine adjustment. Re-tension belt
Workpieces stop in the machine	Workpieces are too short.	'Butt' feed pieces end to end
	Machine adjustment incorrect	Check and correct
	Workpiece thickness does not correspond to machine LED setting	Adjust feed table by operating the height adjustment

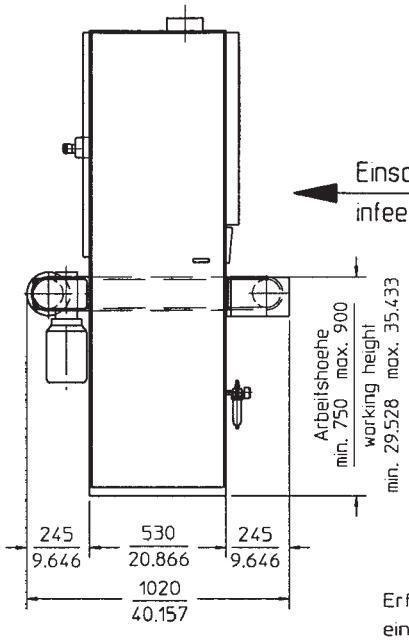
Fault	Possible cause	Action
Workpieces stop in the machine	Pressure of contact roller or sanding pad too excessive	Increase height of contact roller o sanding pad
	Conveyorbelt is dusty and therefore smooth	Clean conveyorbelt
The infeed and outfeed ends of the workpieces have been sanded excessively	Contact roller or sanding pad is et too low	Raise contact roller or sanding pad
The infeed and outfeed ends of the workpieces have been sanded insufficiently	Contact roller or sanding pad is set too high	Lower contact roller or sanding pad
Right or left hand edge of workpiece has been sanded too much	Contact roller or sanding pad is not parallel to the upper pressure rollers	Adjust contact roller or sanding pad on one side
	Felt and graphite of sanding pad are worn in the	Replace and dress felt and graphite
Right and left hand edge of workpiece has been sanded too little	Contact roller or sanding pad is not parallel to the upper pressure rollers	Adjust contact roller or sanding pad on one side
	Workpiece is thinner on longitudinal edges	Replace and dress felt and graphite

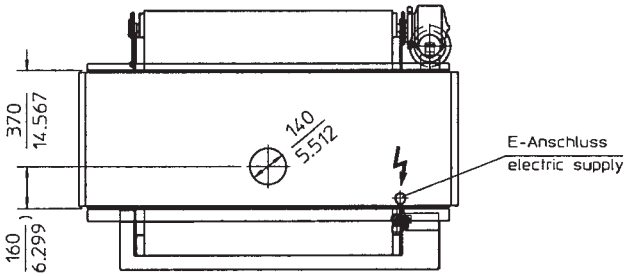
If you cannot solve problems locally, please contact our Service Department.

10. Appendix

- **Installation drawing**
- **Pneumatic dokumentation**
- **Spare parts lists**
- **Electrical documentation**







Erforderlicher Mindestvolumenstrom 1100 cbm/h bei
einer Luftgeschwindigkeit von 20 m/s an den Absaugstutzen.
Empfohlener Volumenstrom 1220 - 1400 cbm/h.

Der Maschinenwiderstand betraegt ca. 800 Pa.

Dust extraction requirement 645 cfm at an air speed of 66 fts.
Recommended range flow 720 - 825 cfm.

Resistance of the machine 3.21 inch wg.

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Arbeitsvorbereitung:									
Archiv: CAD		Index	Änderung	Datum	Name	Index	Änderung	Datum	Name
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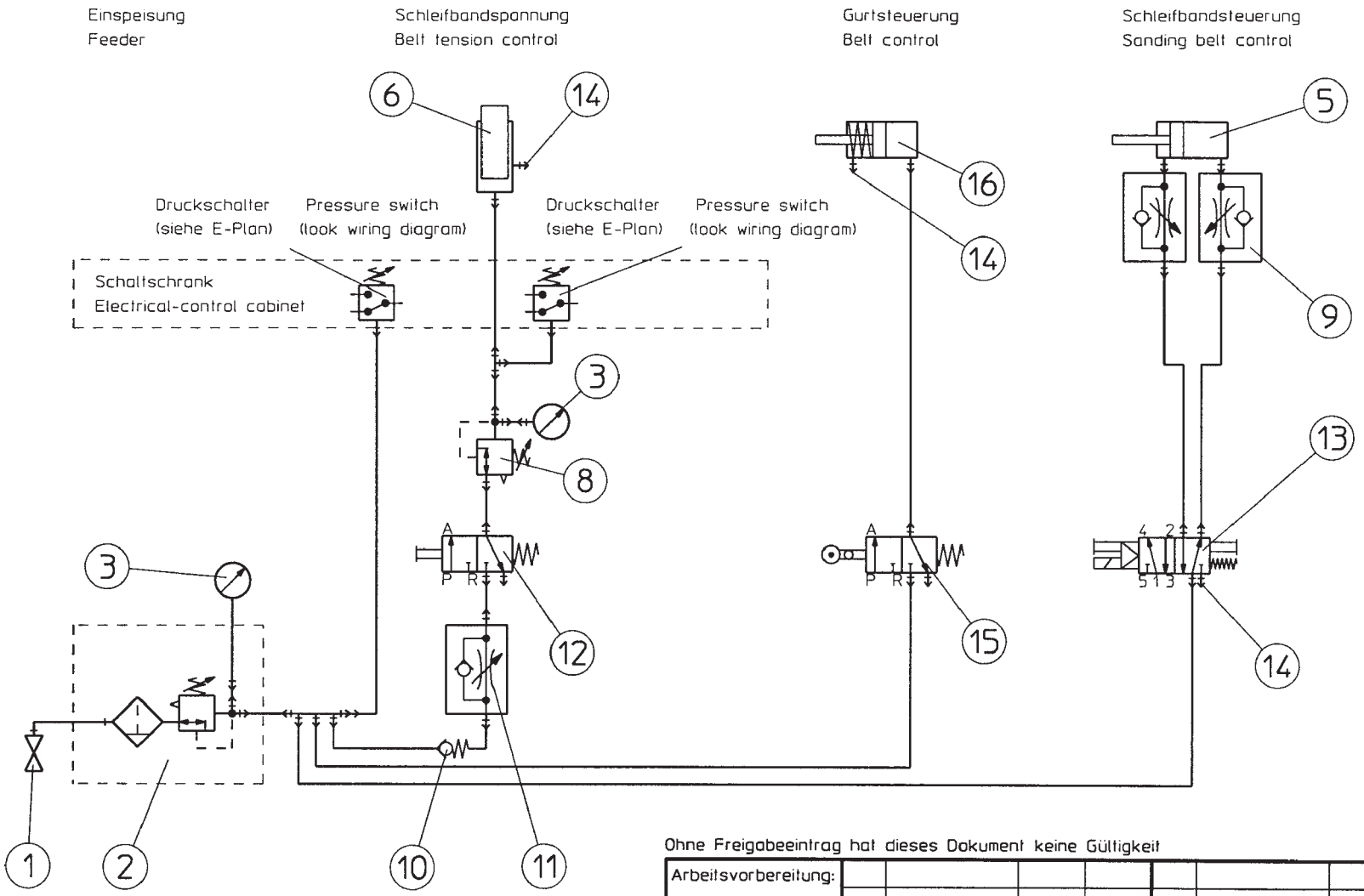
Gezeichn.	14.05.02	Hagedorn							
Geprüft	15.05.02	Driftmeier							
Freigabe	15.05.02	Driftmeier							

BÜTFERING
Schleiftechnik
D-59269 Beckum

Maßstab	Schleifmasch. Optimat SBE 109/K Sanding mach. Optimat SBE 109/K	Zeichnung Nr.
1:20 1:400		ZP.123169
		Ersatz für
		Abgeleitet von

Schutzvermerk n. DIN 34 beachten

format A3



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	Datum	Name
Gezeichn.	14.05.02	Dreier
Geprüft		
Freigabe	15.05.02	Dreier

BÜTFERING
Schleiftechnik
D-59269 Beckum

Maßstab 1:1

Pneumatikschema / Pneumatic scheme
Optimat SBE 109 K

Zeichnung Nr.
ZD.123168

Ersatz für

Abgeleitet von 120776

Schutzvermerk n. DIN 34 beachten

format A3

Pos.	Piece	Description	Draw.-No.:	Type/Dimensions	Mat.-Nr.:
1	1	Pneumatic stoppage	ZD.123168	QH-1/4"	10057
2	1	Filter regulator	ZD.123168	G 1/4"	62537
3	2	Pressure gauge	ZD.123168	G 1/8"	10234
4					
5	1	Oszillation cylinder	ZD.123168	RT/57232/M710	62022
6	1	Belt tension cylinder	ZD.123168	117447	61926
7					
8	1	Pressure regulator	ZD.123168	R07-200-RNKG	34219
9	2	Throttle valve	ZD.123168	GRLA-1/8-QS-6	14478
10	1	Check valve	ZD.123168	H-QS-6	10027
11	1	Throttle valve	ZD.123168	AS1001F-06	67515
12	1	Rocking valve	ZD.123168	3/2-2xM5	63041
13	1	Directional control valve	ZD.123168	9982-MFH-5-1/8	74901
14	3	Silencer	ZD.123168	J-SD5-1/8-SB	52183
15	1	Belt control valve	ZD.123168	RW/0-3-1/8	74929
16	1	Belt control cylinder	ZD.123168	dm 100, Hub 10	75144

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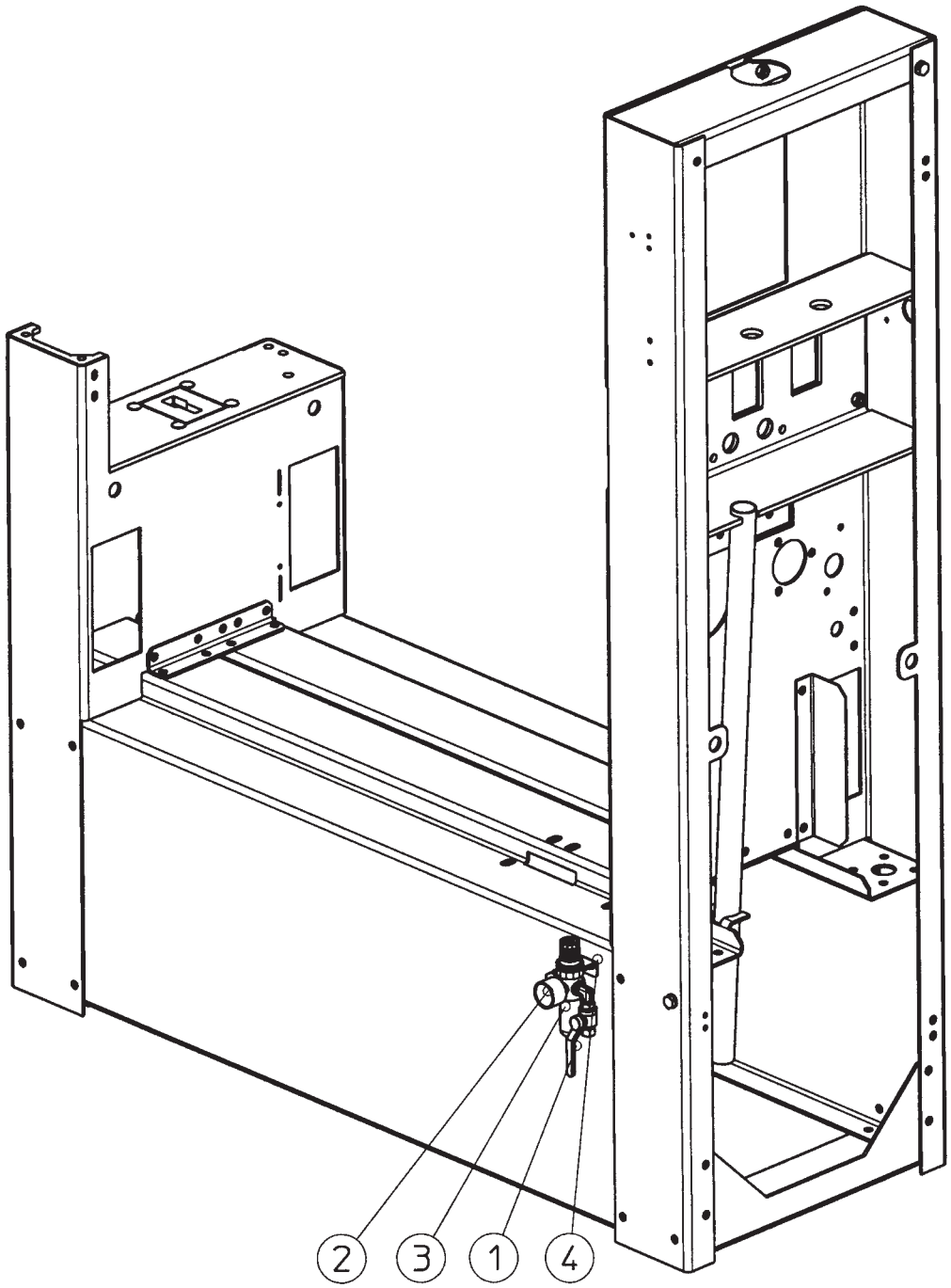
BÜTFERING
Schleiftechnik
D-59269 Beckum

Archiv: CAD

Data form for
Pneumatic scheme ZD.123168
Optimat SBE 109 K

Zeichnung-Nr.: ZD.123172

	Datum	Name
Gezeichn.	15.05.02	Dreier
Geprüft		
Freigabe	15.05.02	Dreier



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Geprüft									
Freigabe	13.05.02	Dreier							

BÜTFERING
Schleiftechnik
D-59269 Beckum

Maßstab
1:1.4
1:7

Ersatzteilplan / Spare part plan

Optimat SBE 109 K

Maschinenunterteil / Machine sub assembly

Zeichnung Nr.
ZD.123158

Ersatz für

Abgeleitet von

Schutzvermerk n. DIN 34 beachten

format A3

BÜTFERING

Ersatzteilliste / Spare part list

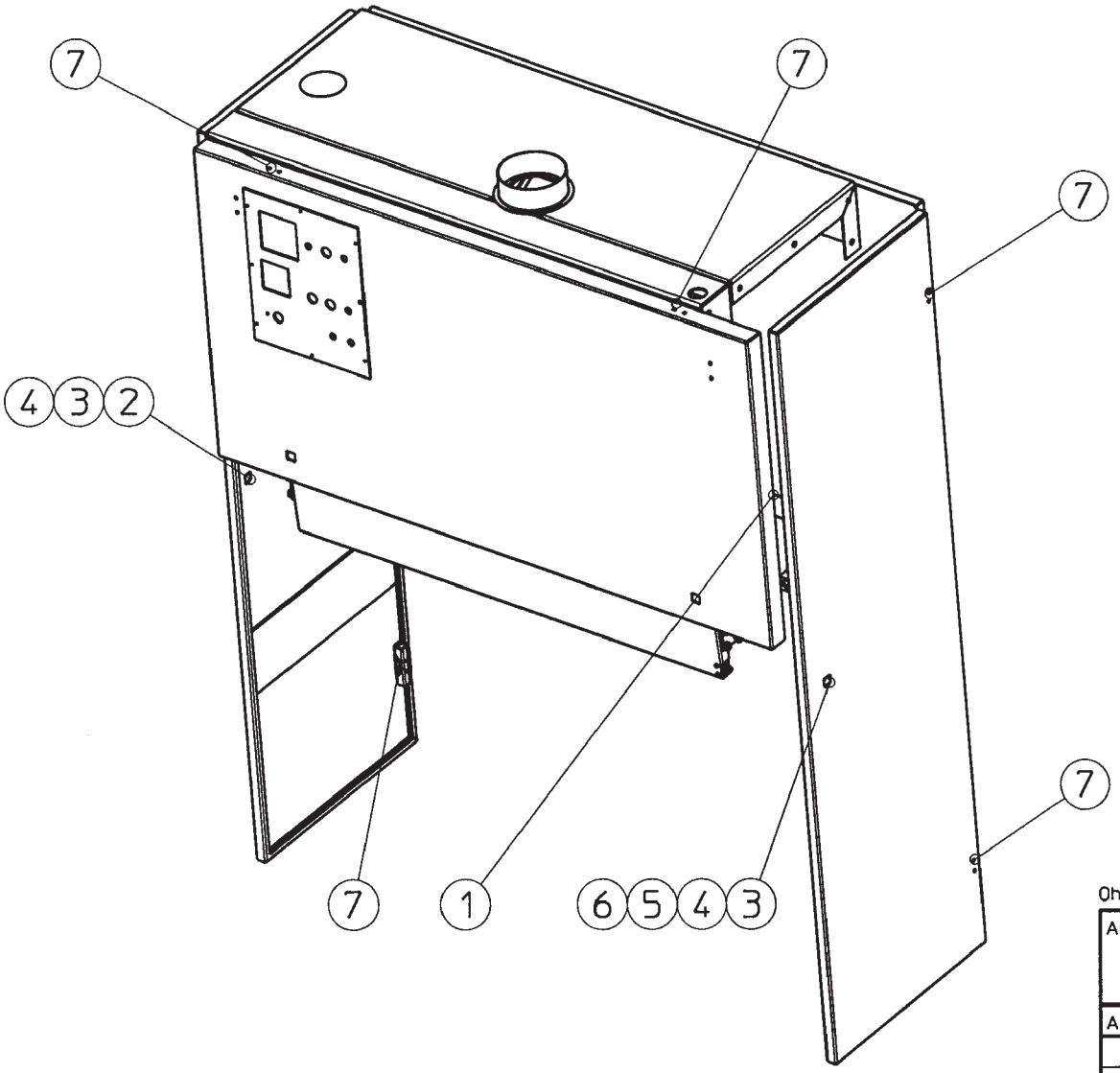
Gebr. Bütfering GmbH Maschinenfabrik	– Ersatzteilliste / spare part list – Zu Ersatzteilplan : 123158 in addition to spare part plan : 123158	Blatt 1 page 1

Für Artikel : Schleifmaschine, Optimat SBE 109 K
for part : Sanding machine, Optimat SBE 109 K

Baugruppe : Maschinenunterteil, Optimat SBE 109 K
subpart : Machine sub assembly, Optimat SBE 109 K

Pos. pos.	Art.Nr. part No	Bezeichnung description	Anzahl quantity
1	10057	Kugelhahn, QH 1/4", zur Druckluft Absperrung am Maschineneingang.	1
	10057	Pneumatic-stoppage, type: QH 1/4.	1
2	10234	Manometer, 0 - 10 bar, G 1/8", Dm 40 mm,	1
	10234	Pressure gauge, 0 - 10 bar, G 1/8", diam. 40 mm,	1
3	62537	Filterregler 40, 0.3 - 7.0 bar, G 1/4" B07-201-M3KG, Norgren: 958101	1
	62537	Filter regulator 40, 0.3 - 7.0 bar, G 1/4", B07-201-M3KG, Norgren 958101	1
4	62540	Befestigung mit Mutter 18-999-444, Norgren	1
	62540	Mounting nut, 18-999-444, Norgren	1

Verschleißteile sind mit einem * vor der Artikelnummer gekennzeichnet, Ausgedruckt von : Dreier V-1.9
wearing parts are signed with a * in front of the part no. printed by : Dreier V-1.9



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Geprüft		
Freigabe	13.05.02	Dreier

BÜTFERING
Schleiftechnik
D-59269 Beckum

Maßstab	Ersatzteilplan / Spare part plan	Zeichnung Nr.
1:1 1:10	Optimat SBE 109 K Maschinenoberteil / Machine upper frame	ZD.123148
		Ersatz für
		Abgeleitet von

Schulzvermerk n. DIN 34 beachten

format A3

BÜTFERING

Ersatzteilliste / Spare part list

Gebr. Bütfering GmbH Maschinenfabrik	– Ersatzteilliste / spare part list – Zu Ersatzteilplan : 123148 in addition to spare part plan : 123148	Blatt 2 page 2

Für Artikel : Schleifmaschine, Optimat SBE 109 K
for part : Sanding machine, Optimat SBE 109 K

Baugruppe : Maschinenoberteil,, Optimat SBE 109 K
subpart : Machine upper frame, Optimat SBE 109 K

Pos. pos.	Art.Nr. part No	Bezeichnung description	Anzahl quantity
1	11928	Deckelstütze, Typ: 1097-U1	2
	11928	Door stabilizer, 1097-U1, 215 mm	2
2	11966	Knebelgriff mit Gehäuse, 1000-U9, einschraubbar,	1
	11966	T-handle with housing, 1000-U9,	1
3	11973	Zunge, 1000-13,	2
	11973	Door latch, 1000-13,	2
4	11981	Zunge 1000- 53	2
	11981	Door latch 1000-53	2
5	11988	Gehäuse mit Mutter, 1000-U 51	3
	11988	Door lock housing with lock nut, 1000-U51	3
6	11990	Betätigungsdorn, 1000 - U 5	3
	11990	Operating thorn, 1000 - U 5.	3
7	53107	Scharnier-Anschraub, Stift mit Nut Best.Nr: 243-9104, Öffnungswinkel 120°	6
	53107	Hinge	6

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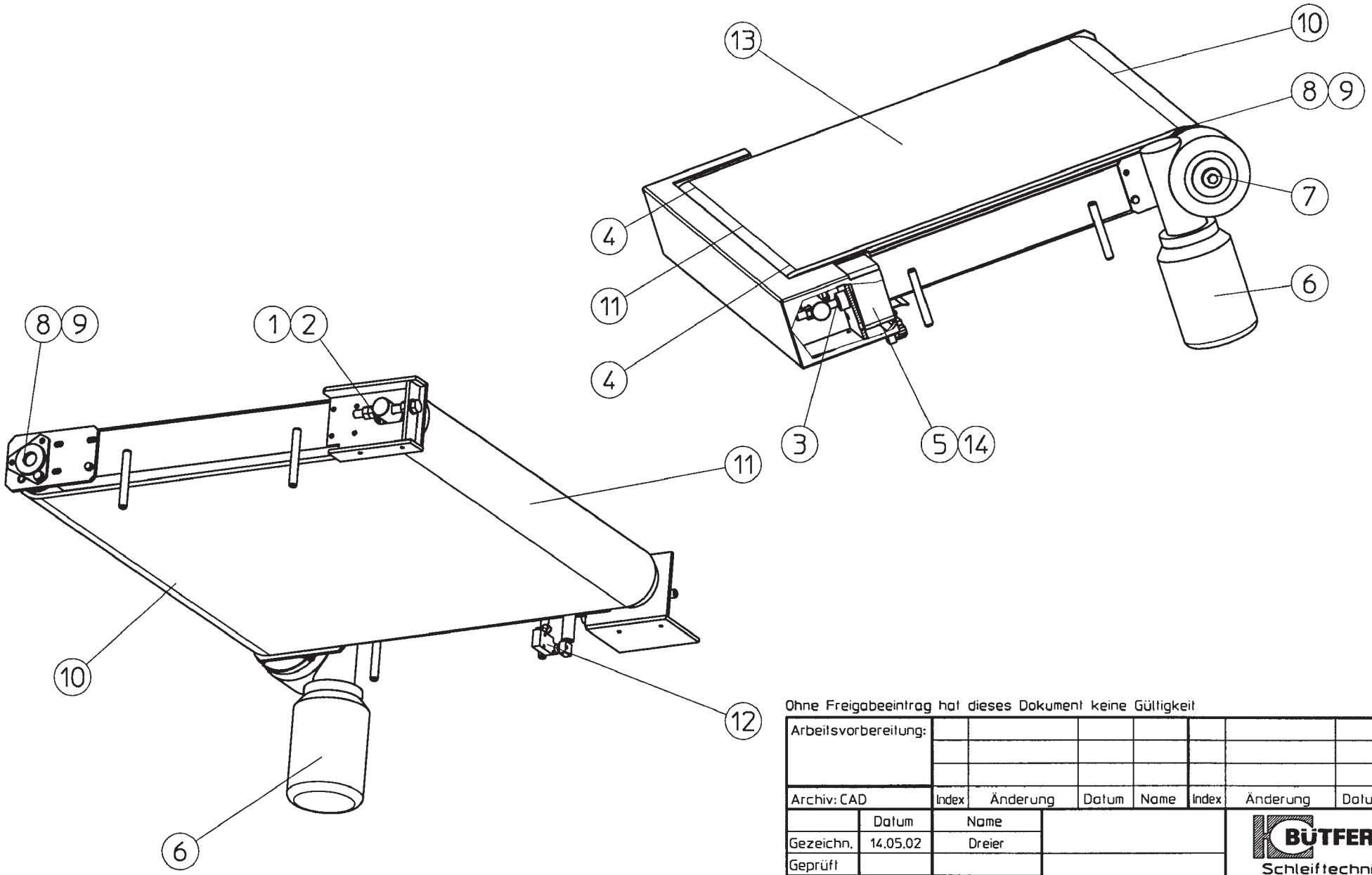

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BÜTFERING
Schleiftechnik
D-59269 Beckum

Maßstab
1:1.5
1:7.5

Ersatzteilplan / Spare part plan

Optimat SBE 109 K

Vorschubeinheit / Conveyor table assembly

Zeichnung Nr.
ZD.123167

Ersatz für

Abgeleitet von 123162

"Schutzvermerk n. DIN 34 beachten"

format A3

BÜTFERING

Ersatzteilliste / Spare part list

Gebr. Bütfering GmbH Maschinenfabrik	– Ersatzteilliste / spare part list – Zu Ersatzteilplan : 123167 in addition to spare part plan : 123167	Blatt 3 page 3

Für Artikel : Schleifmaschine, Optimat SBE 109 K
for part : Sanding machine, Optimat SBE 109 K

Baugruppe : Vorschubeinheit kompl., K11, 950mm .,400V, 50Hz,+460V, 60Hz,
subpart : Conveyor table assembly, K11, 950mm, 400V, 50Hz, +460V, 60Hz

Pos. pos.	Art.Nr. part No	Bezeichnung description	Anzahl quantity
1	11914	Kegelpfanne 19 - DIN 6319, Form D, für Schraube M 16	1
	11914	Self aligning washer, DIN 6319-19-D	1
2	11916	Kugelscheibe 17 - DIN 6319, Form C, für Schraube M 16	1
	11916	Self aligning washer, DIN 6319-17-C	1
3	11944	Druckstück DIN 6311- 32-S Dm12.1	1
	11944	Push rod DIN 6311 - 32 - S	1
4	27106	Rillenkugellager, 6309-2RS1 LgDm 45, beidseitige Dichtscheibe	2
	27106	Bearing, 6309, sealed on both sides. grooved ball bearing,	2
5	52183	Schalldämpfer J-SD5-1/8-SB, Kurz mit Sechskant	1
	52183	Silencer J-SD5-1/8-SB	1
6		Bitte bei Ersatzteilbestellung die auf dem Typenschild genannten Daten angeben !!	1
		By spare part orders please state the data mentioned on the data plate !!	1
7	62273	Paßfeder A 8 x 7 - 100 DIN 6885/1	1
	62273	Feather key A 8 x 7 - 100	1
8	70978	Hülsenlager, Kugellager YAT 206 dm 30	2
	70978	Ball bearing YAT 206, Ø 30,	2
9	70979	Gehäuse für Lager YAT 206 dm 30	2
	70979	Housing for ball bearing YAT 206, PFD 62	2
10	74864	Trommel mtlg. Dm 115 - 982 EASY 950, Vorschubantrieb	1
	74864	Drum, Ø 115 - 982, Drive drum for conveyor belt	1
11	74871	Rolle Dm 110 - 1008 EASY 950, Gurtspanntrommel	1
	74871	Roller Ø 110 - 1008, take-up pulley	1

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Gebr. Bütfering GmbH Maschinenfabrik	– Ersatzteilliste / spare part list – Zu Ersatzteilplan : 123167 in addition to spare part plan : 123167	Blatt 4 page 4

Für Artikel : Schleifmaschine, Optimat SBE 109 K
for part : Sanding machine, Optimat SBE 109 K

Baugruppe : Vorschubeinheit kompl., K11, 950mm .,400V, 50Hz,+460V, 60Hz,
subpart : Conveyor table assembly, K11, 950mm, 400V, 50Hz, +460V, 60Hz

Pos. pos.	Art.Nr. part No	Bezeichnung description	Anzahl quantity
12	74929	Wegeventil, RW/O-3-1/8 . Stoesselventil,	1
	74929	Valve RW/0-3-1/8	1
13	*74956	Transportgurt, 950 x 2045 mm, endlos, Karo Klein, 14 B, EPQ 3, Haerte: 40	1
	*74956	Conveyor belt, 950 x 2045 mm, endless 14 B, EPQ 3,	1
14	75144	Zylinder, Pneumatik, Dm:100mm, Hub:10mm. einfachwirkend,	1
	75144	Cylinder Ø 100 mm, stroke 10 mm,	1

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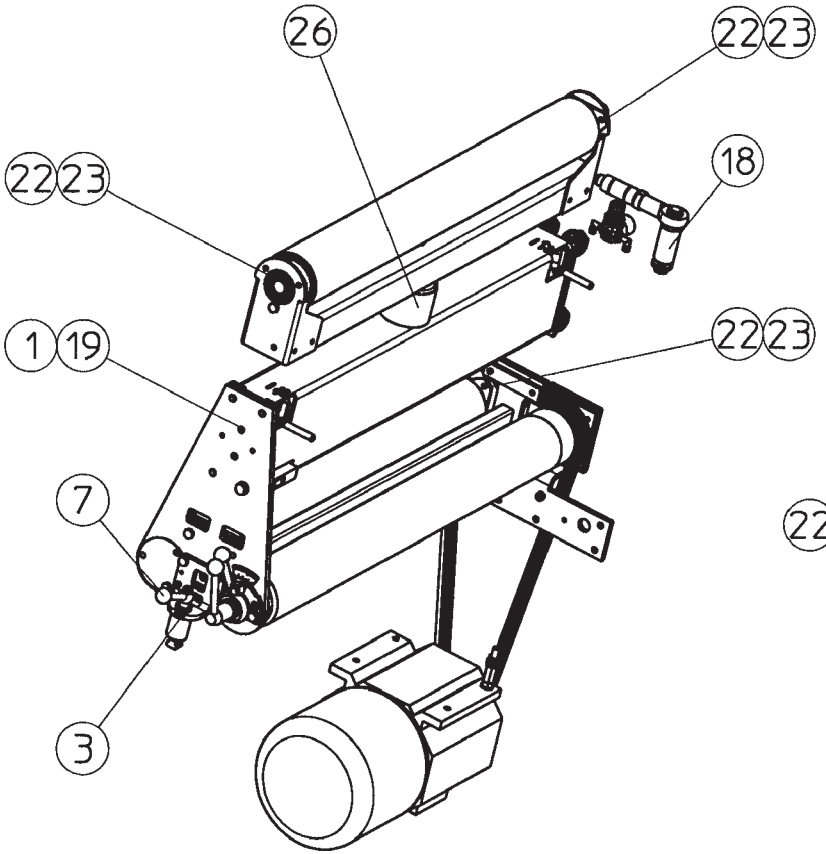

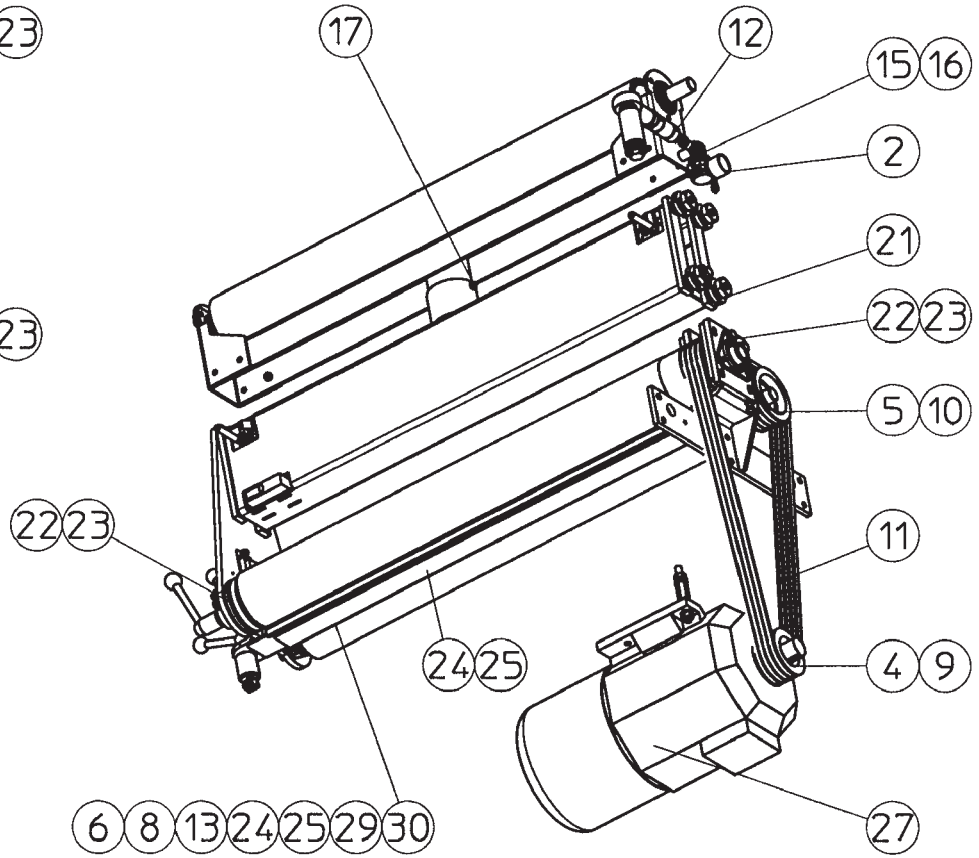

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BÜTFERING
Schleiftechnik
D-59269 Beckum

Maßstab	Ersatzteilplan / Spare part plan	Zeichnung Nr.
1:2 1:10	Optimat SBE 109 K Breitbandaggregat Combi / Abracive belt assembly Combi	ZD.123160 Ersatz für Abgeleitet von

"Schutzvermerk n. DIN 34 beachten"

format A3

Gebr. Bütfering GmbH Maschinenfabrik	– Ersatzteilliste / spare part list – Zu Ersatzteilplan : 123160 in addition to spare part plan : 123160	Blatt 5 page 5

Für Artikel : Schleifmaschine, Optimat SBE 109 K
for part : Sanding machine, Optimat SBE 109 K

Baugruppe : Breitbandaggregat, K11, 109, Combi,SW..,..N-11.0,..,
subpart : Abrasive belt assembly, K11, 109, Combi, SW..,..N-10.0,..,

Pos. pos.	Art.Nr. part No	Bezeichnung description	Anzahl quantity
1	10027	Rückschlagventil, H-QS-6	1
	10027	Check valve, H-QS-6	1
2	10234	Manometer, 0 - 10 bar, G 1/8", Dm 40 mm,	1
	10234	Pressure gauge, 0 - 10 bar, G 1/8", diam. 40 mm,	1
3	11441	Druckfeder, in der Aggregatabstützung, Durchmesser 14 mm, Länge 20 mm.	1
	11441	Pressure spring in the head support, 14 mm dia., length 20 mm	1
4	11868	Keilriemenscheibe SPZ 4 x 90, f. Taper-Spannbuchse	1
	11868	V-belt pulley	1
5	11870	Keilriemenscheibe SPZ 4 x 112, f. Taper-Spannbuchse	1
	11870	V-belt pulley, SPZ 4 x 112,	1
6	12049	Doppelseitiges-Klebeband, 55 mm breit, für Schleifschuh-Bestückung.	3,108
	12049	adhesive tape 55 mm width	3,108
7	12109	Kugelgriff, GN 6337.3- 28-M12-N, verstellbar,	1
	12109	Kip handle, GN 6337.3-28-M12-N, adjustable	1
8	*12149	Filz 0.50 g/cm3 8 x 55 x 1030, einseitig klebend	1
	*12149	Felt 0.50, 8 x 55 x 1030 mm,	1
9	12207	Spannbuchse, Typ:1610, mit Nut, für Bohrung Dm 38 mm.	1
	12207	Taperlock for v-belt pulley	1
10	12210	Spannbuchse, Typ:2012, mit Nut, für Bohrung Dm 28 mm.	1
	12210	Taperlock for v-belt pulley	1
11	*12448	Keilriemen, LW 1800, SPZ, DIN 7753,	4
	*12448	V-belt, SPA 1800, profile: SPA, DIN 7753,	4

Gebr. Bütfering GmbH Maschinenfabrik	– Ersatzteilliste / spare part list - Zu Ersatzteilplan : 123160 in addition to spare part plan : 123160	Blatt 6 page 6

Für Artikel : Schleifmaschine, Optimat SBE 109 K
for part : Sanding machine, Optimat SBE 109 K

Baugruppe : Breitbandaggregat, K11, 109, Combi,SW..,..N-11.0,..,
subpart : Abrasive belt assembly, K11, 109, Combi, SW..,..N-10.0,..,

Pos. pos.	Art.Nr. part No	Bezeichnung description	Anzahl quantity
12	14478	Drossel-Rückschlagventil, GRLA-1/8-QS-6	2
	14478	Throttle valve, GRLA-1/8-QS-6	2
13	*21830	Gleitbelag, UK 20, 55 mm breit. Für Classic und ECO Maschinen.	2,06
	*21830	Graphite strip, 55 mm width, grade UK 20.	2,06
14	*22740	Schleifband Ho, 970x1900,K- 150,Papier endlos, Trockenschliff, Edelkorund,	1
	*22740	Abrasive belt, 970 x 1900 mm, grit size 150,	1
15	34219	Druckregler, 0.3 - 7.0 bar,	1
	34219	Pressure regulator, 0.3 - 7.0 bar,	1
16	34221	Rändelmutter für Druckregler aus Kunststoff	1
	34221	Locking ring for pressure regulator	1
17	52183	Schalldämpfer J-SD5-1/8-SB, Kurz mit Sechskant	2
	52183	Silencer J-SD5-1/8-SB	2
18	62346a	Halter für Oszillationszylinder	1
	62346a	Support for oszillation cylinder	1
19	63041	Wegeventil, Kipphebelventil (3/2) 2xM5 2x M 5, Ms vernickelt, Best.Nr: 61.005	1
	63041	Rocking valve, (3/2) 2xM5, No.: 61.005	1
20	67515	Drosselrückschlagventil, für Dm 6 mm, max 10 bar,	1
	67515	Throttle valve, for diam. 6 mm, max. pressure 10 bar,	1
21	68003	Nutmutter M 30 x 1.5 DIN 1804 St, (nicht selbstsichernd)	4
	68003	Groove nut, M30 x 1.5 DIN 1804 St	4
22	70978	Hülsenlager, Kugellager YAT 206 dm 30	6
	70978	Ball bearing YAT 206, Ø 30,	6

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BÜTFERING

Ersatzteilliste / Spare part list

Gebr. Bütfering GmbH Maschinenfabrik	– Ersatzteilliste / spare part list – Zu Ersatzteilplan : 123160 in addition to spare part plan : 123160	Blatt 7 page 7

Für Artikel : Schleifmaschine, Optimat SBE 109 K
for part : Sanding machine, Optimat SBE 109 K

Baugruppe : Breitbandaggregat, K11, 109, Combi,SW..,..N-11.0,..,
subpart : Abrasive belt assembly, K11, 109, Combi, SW..,..N-10.0,..,

Pos. pos.	Art.Nr. part No	Bezeichnung description	Anzahl quantity
23	70979	Gehäuse für Lager YAT 206 dm 30	12
	70979	Housing for ball bearing YAT 206, PFD 62	12
24	*74333	Schleifzunge, Filz 0.50, 950 Arb.Br. Ecomat SBE	1
	*74333	Sanding insert, felt 0.50 working 950 mm	1
25	*74334	Schleifzunge, Filz 0.68, 950 Arb.Br. Ecomat SBE	1
	*74334	Sanding insert, felt 0.68, working width 950 mm	1
26	74446	Dichtring, O-Ring dm 70 - 3 72 NBR 872	1
	74446	Conical nipple Ø 70 - 3	1
27	74852	E-Motor 11kW, 3510UpM, B3, KKO, 134M, WF 190-830V/50-60Hz,IP54, von Fa.Watt-Drive	1
	74852	Drive motor, 11kW, 3510 RPM, B3, KKO, 134M, 190-830V, 50-60Hz, IP54,	1
28	74901	Wegeventil Best-Bez:9982 MFH-5-1/8 24 V AC - OD m. Spule MSVW-24 AC 50/60	1
	74901	Directional control valve MFH-5-1/8	1
29	75177	Federbandstahl 65 x 1.0 - 1115	2
	75177	Spring steel 65 x 1.0 - 1115	2
30	*75182	Filz 0.68 g/cm3 8 x 55 x 1030, einseitig klebend	1
	*75182	Felt 0.68 g/cm3 8 x 55 - 1030	1

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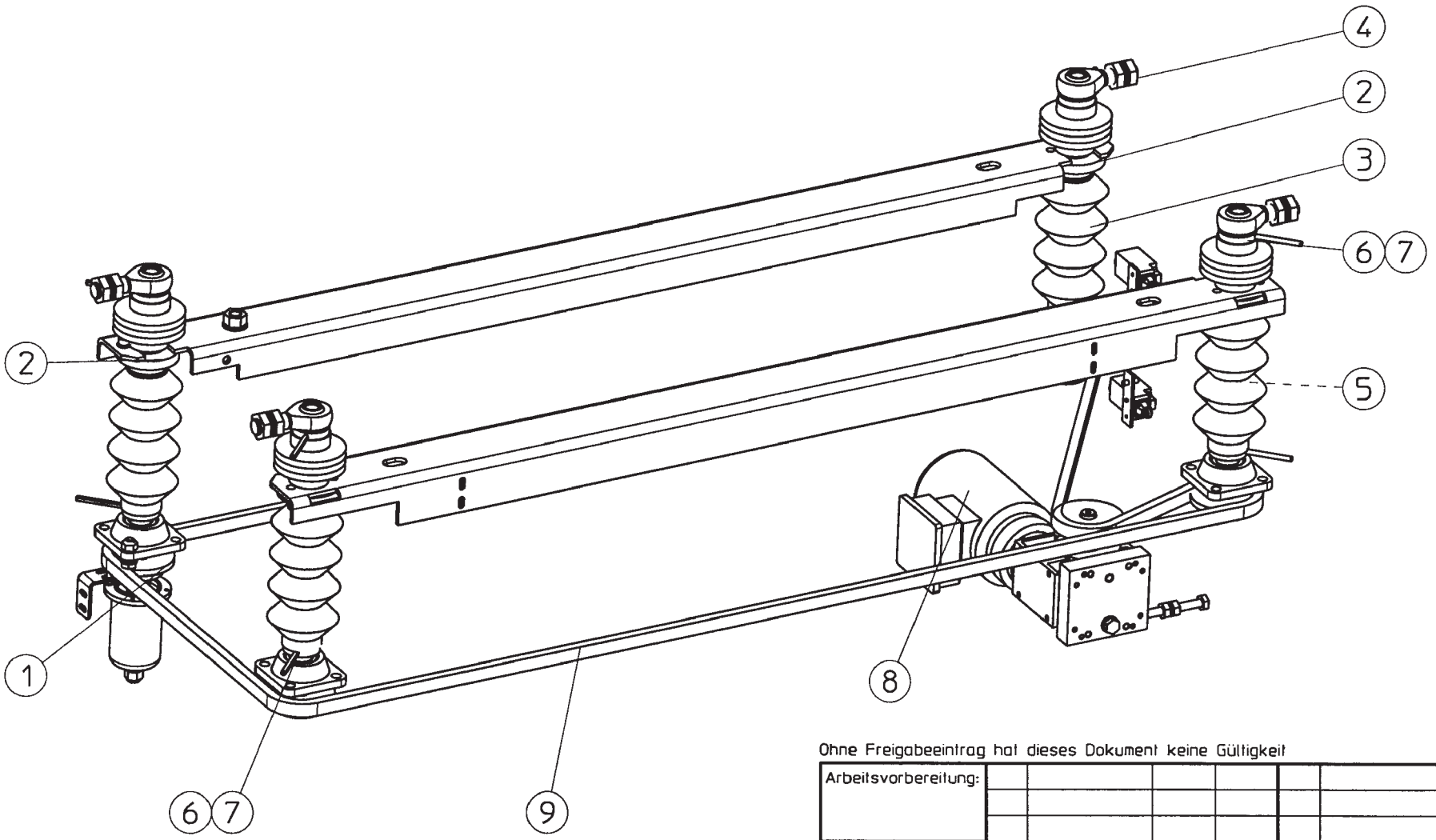

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BÜTFERING
Schleiftechnik
D-59269 Beckum

Maßstab	Ersatzteilplan / Spare part plan	Zeichnung Nr.
1:1 1:5	Optimat SBE 109 K Dickenverstellung / Height adjustment assembly	ZD.123144
		Ersatz für
		Abgeleitet von

Schutzvermerk n. DIN 34 beachten

format A3

Gebr. Bütfering GmbH Maschinenfabrik	– Ersatzteilliste / spare part list – Zu Ersatzteilplan : 123144 in addition to spare part plan : 123144	Blatt 8 page 8

Für Artikel : Schleifmaschine, Optimat SBE 109 K
for part : Sanding machine, Optimat SBE 109 K

Baugruppe : Dickenverstellung, K11, Optimat 109 K,400V,50Hz,230V,60Hz, Standard,
subpart : Height adjustment assembly, K11, Optimat SBE 109 K

Pos. pos.	Art.Nr. part No	Bezeichnung description	Anzahl quantity
1	11727	Kettenrad 1/2 Zoll, Z=19, Bo=20, NL=22, Dm=60,	4
	11727	Sprocket, 1/2 inch, Z=19, Bo=20, NL=22 , Dm=60,	4
2	16217a	Spindelmutter, Tr 30 x 4	4
	16217a	spindle nut Tr 30 x 4,	4
3	17876	Faltenbalg, TH 59, schwarz, mit glatter Stulpe,	8
	17876	Rubber boot, TH 59, black, with smooth sleeve,	8
4	25122	Sechskantmutter M 20 x 1.5 DIN 439-B-04 verz., niedrige Form	8
	25122	hexagonal nut M 20 x 1.5	8
5	25126a	Spindel, Tr 30 x 4,	4
	25126a	spindle, Tr 30 x 4,	4
6	62322a	Halterung Ø50mm	8
	62322a	Support Ø50mm	8
7	62436	Gleitlager 202425 BP25 Innen 20mm, Außen 24mm, Höhe 25mm,	16
	62436	plain bearing 202425 BP25 inside Ø 20mm, outside Ø24mm,	16
8	74999	Getriebemotor, MU.40 100/1 56 b/4 0.09kW, 14U/min, 230/400 V,50/60 Hz	1
	74999	Gearbox with motor MU.40 100/1 56 b/4	1
9	75193	Einfach-Rollenkette 0.5 Z, 12.7 mm 7.75 l.W.,312 Gl.,DIN 8187,inkl.V-Gli	1
	75193	Chain 0.5 Z, 12.7 mm, 7.75 l.W., 312 Gl,	1

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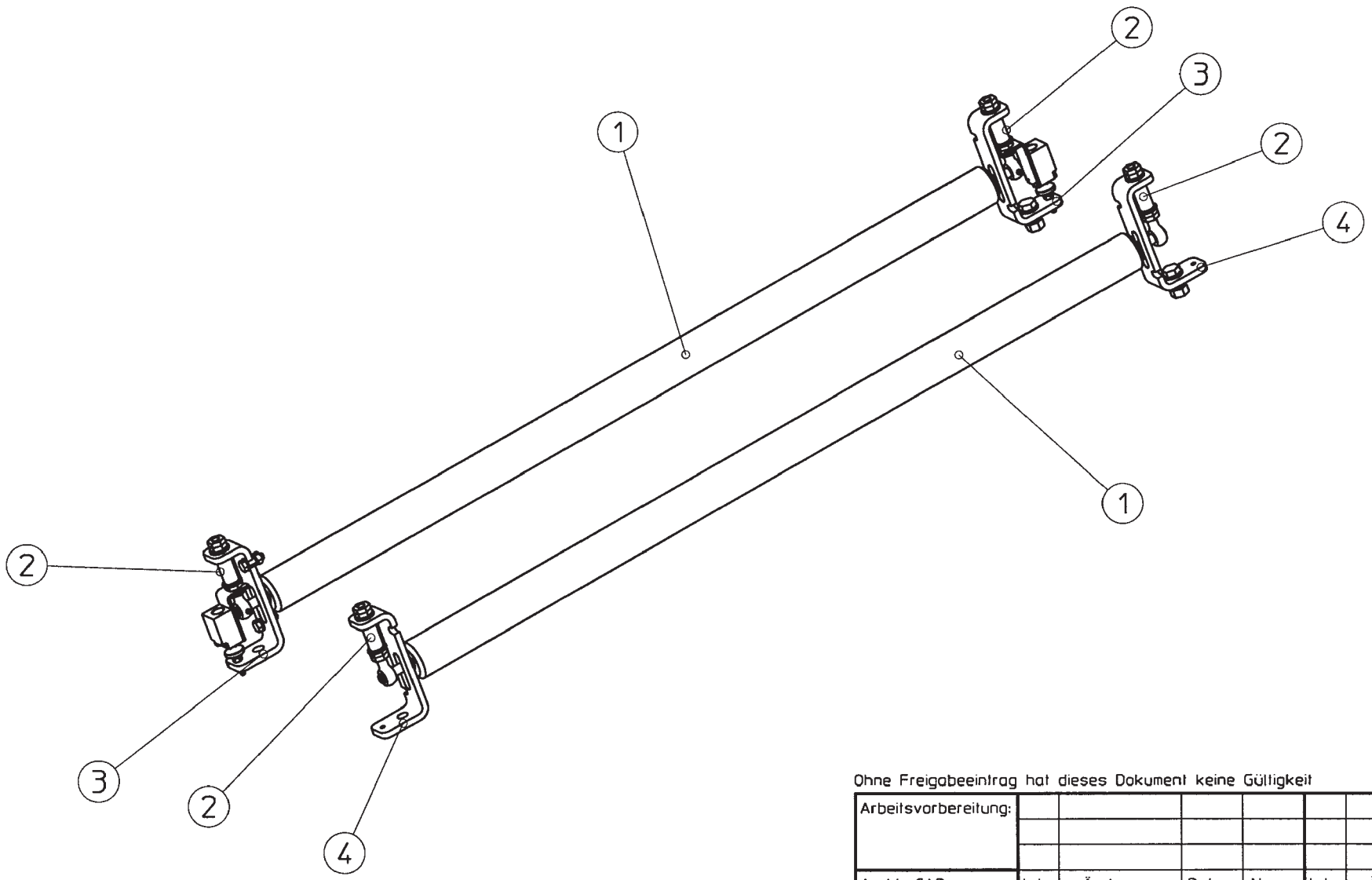

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BÜTFERING
Schleiftechnik
D-59269 Beckum

Maßstab
1:1
1:5

Ersatzteilplan / Spare part plan

Optimat SBE 109 K

Andruckelemele / Pressure elements

Zeichnung Nr.
ZD.123145

Ersatz für

Abgeleitet von

Schutzvermerk n. DIN 34 beachten

format A3

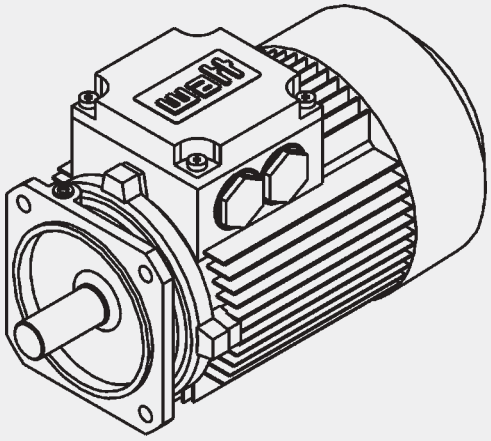
Gebr. Bütfering GmbH Maschinenfabrik	– Ersatzteilliste / spare part list – Zu Ersatzteilplan : 123145 in addition to spare part plan : 123145	Blatt 9 page 9

Für Artikel : Schleifmaschine, Optimat SBE 109 K
for part : Sanding machine, Optimat SBE 109 K

Baugruppe : Andruckelemente, K11, 109, Standard,, Optimat 109 K
subpart : Pressure elements, K11, 109, Standard,, Optimat 109 K

Pos. pos.	Art.Nr. part No	Bezeichnung description	Anzahl quantity
1	74384a	Druckrolle Dm 50 x 3.0 x 1090 mm Einbaulaenge 1100 mm,	2
	74384a	Roller Ø50 x 3.0 x 1090	2
2	74652	Druckfeder FR= 4,682N/mm lo: 68.00 Dm 16 if 8.5 d 2.0	4
	74652	Spring FR= 4,682N/mm lo: 68.00, Dm: 16, if: 8.5, d: 2.0	4
3	74654	Halter fuer Rolle Ecomat 950 Schaltrolle fuer Ueberdickenschutz,	2
	74654	Support for roller	2
4	74655	Halter fuer Rolle Ecomat 950, Andruckrollen	2
	74655	Support for roller	2

Betriebs- und Wartungsanleitung
Operating and maintenance manual



EUSAS-Motor
EUSAS-motor

WATT EUSAS Motore
WATT EUSAS motors

BA
Motore

watt drive

1. Sicherheitshinweise

- Der Kunde ist verantwortlich für die fachgerechte Aufstellung des Antriebes.
  Bestätigte Eigenschaften der Antriebe sowie die Erfüllung eventueller Garantieansprüche bedingen die Einhaltung der Hinweise in dieser Betriebsanleitung.
- Achten Sie darauf, niemals beschädigte Produkte in Betrieb zu nehmen!
- Lesen Sie die Betriebsanleitung sorgfältig, bevor Sie mit Aufstell-, Montage- oder Wartungsarbeiten beginnen.
- Beachten Sie unbedingt die in der Betriebsanleitung enthaltenen Sicherheitshinweise, die wie folgt gekennzeichnet sind:

1. Safety Instructions

- The user is responsible for correct installation of the drive unit. Drive unit properties can only be guaranteed and warranty claims considered if the instructions in this manual have been observed.
- Never use damaged products.
- Please read the operating instructions carefully before starting any installation, assembly or maintenance work.
- Follow the safety instructions in the manual at all times. For easy identification they are marked as follows:

	Warnung vor elektrischer Gefahr, z.B. Bei Arbeiten unter Spannung. Warning of electrical danger, e.g. working with live machines.
	Warnung vor mechanischer Gefahr, z.B. Arbeiten an Hubwerken. Warning of mechanical danger, e.g. working with hoisting equipment.
	Wichtige Anweisung für sicheren und störungsfreien Betrieb. Important instructions for safe, trouble-free operation.

Warnung:
Spannungsführende und bewegte Teile in elektrischen Maschinen können schwere oder tödliche Verletzungen verursachen.
Montage, Anschluß, Inbetriebnahme, sowie Wartungs- und Reparaturarbeiten dürfen nur durch **qualifiziertes Fachpersonal** erfolgen unter Berücksichtigung:

1. dieser Anleitung,
2. aller anderen zum Antrieb gehörenden Projektierungsunterlagen, Inbetriebnahmeanleitungen und Schaltbilder,
3. der aktuell gültigen nationalen und regionalen Vorschriften über Sicherheit und Unfallverhütung.

Warning
Live or moving parts in electrically driven machines can cause serious or fatal accidents.

Only **qualified personnel** may carry out assembly, connection, commissioning, maintenance and repair work and must observe the following:

1. these instructions,
2. all other planning documentation, commissioning instructions and circuit diagrams for the drive unit
3. the applicable regional and national regulations on safety and accident prevention.

4. Elektrischer Anschluß (bei Getriebemotoren)

Der Elektroanschluß darf nur durch einen befugten Elektrofachmann durchgeführt werden!
Die in der Elektrotechnik gültigen Regeln und Vorschriften, insbesondere hinsichtlich Schutzmaßnahmen sind zu beachten.
Die Vorschriften der örtlichen nationalen Energieversorgungsunternehmehmen sind ebenso einzuhalten.

Vor Inbetriebnahme ist zu prüfen, ob die Netzspannung und Frequenz mit den angeführten Daten am Motorleistungsschild übereinstimmen.

- Motoranschluß nach Schaltbild vornehmen (siehe Seite 12 und 13;
- sichere Schutzleiterverbindung herstellen;
- eventuell falsche Drehrichtung korrigieren durch Vertauschen von 2 Phasen;
- nicht benötigte Kabeleinführungsöffnungen und den Kasten selbst staub- und wasserdicht ver schließen;
- Überbelastung und Phasenausfall durch Schutzschalter vorbeugen;
- vor Inbetriebnahme ist der Isolierwiderstand der Wicklung zu kontrollieren;

Achtung! Ein Motorschutzschalter bzw. ein Schutz mit Überstromrelais zum Schutz der Motorwicklungen ist **unbedingt** zu installieren. Schmelzsicherungen schützen den Motor **nicht** vor Überlastungen sondern lediglich die Netzzuleitungen oder Schaltanlagen gegen Schäden bei Kurzschluß.

4.1. Aufstellung und Anschluß des Motors

Die Motoren in Standardausführung sind für den Betrieb bei einer maximalen Umgebungstemperatur von +40°C (104°F) sowie einer Aufstellungshöhe bis 1000m über dem Meeresspiegel geeignet.
Die Aufstellung hat so zu erfolgen, daß der Zutritt von Frischluft und das Abströmen der Warmluft ungehindert erfolgen kann. Es ist verboten den Lüfterflügel und die Lüfterhaube zu entfernen bzw. den Motor in ein Gehäuse einzuschließen, da in beiden Fällen die Kühlluftzufuhr verringert wird. Dadurch würde der Motor überhitzt werden.

Kondenswasserbohrung

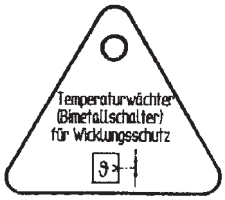
Bei Motoren, die starken Temperaturschwankungen oder extremen klimatischen Verhältnissen ausgesetzt sind, empfehlen wir eine Kondenswasserbohrung.

Achtung! Bei Motoren mit Kondenswasserbohrungen ist auf die richtige Einbaulage zu achten!

Temperaturwächter TH

Temperaturwächter sind kleine Bimetallschalter, die beim Überschreiten der Ansprechtemperatur einen Kontakt öffnen oder schließen. Der Öffnungskontakt trennt den Erregerkreis des Motorschützes und die Spannungsversorgung des Motors wird damit getrennt.

Farbe: rot



4. Electrical connection (at geared motors)

Only authorized electricians are permitted to connect electrical systems.
Observe all rules and regulations governing electrical installations, especially safety precautions.
The national utility regulations for the country concerned also have to be complied with.

Before starting the motor, please check that the mains voltage and frequency correspond to the data on the motor rating plate.

- Connect the motor as in the circuit diagram (see pages 12 and 13)
- Connect the equipment grounding conductor
- Check the motor rotation and correct if necessary by revers ing the phases
- Seal any unused cable entries and the terminal box ensuring that it is dust and watertight
- Install a circuit breaker to prevent overloading and phase failure
- Before starting the motor, check the insulation resistance of the winding.

Warning! A motor circuit breaker or contactor with an overcurrent relay **must be installed** to prevent the motor winding from burning out. Fuses **do not** stop the motor overloading, but merely protect the power cables or switchgear from damage in the event of a short circuit.

4.1. Motor installation and connection

Standard motors are suitable for use at a max. ambient temperature of +40°C (104°F) and an altitude of up to 1000m above sea level.
When installing the motor, ensure that the intake is not obstructed and air can circulate freely. Do not remove the fan blade or cowl, or enclose the motor with a casing because in both cases there would not be enough air for cooling and the motor could overheat.

Condensate drain hole

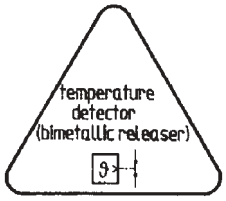
If motors are subject to great fluctuations in temperature or extreme climatic conditions, we recommend using a condensate drain hole.

Warning! Before installing motors with condensate drain holes, check that the mounting position is correct.

Temperature controller TH

Thermostats have small bimetallic strips that make or break a contact when the critical temperature is reached. The break contact opens the field circuit and disconnects the power supply to the motor.

Colour: red



Kaltleitertemperaturfühler TF

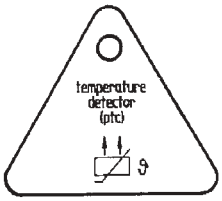
Kaltleitertemperaturfühler sind Halbleiter, bei denen der ohmsche Widerstand bei Erreichen der Bemessungs-ansprechtemperatur extrem ansteigt.
Zusätzlich zu den Kaltleiterfühlern ist ein Auslösgerät notwendig. Das im Auslösegerät befindliche Relais mit einem Wechselkontakt kann nach Bedarf zum Unterbrechen des Erregerkreises des Motorschützers oder zum Auslösen eines Warnsignals verwendet werden.

Farbe: gelb

Thermistor protection TF

PTC thermistors are semi-conductors whose electrical resistance increases dramatically when the critical temperature is reached. In addition to the PTC thermistor, a control unit is also required. The relay in the tripping unit has a changeover contact, which can either be used to open the excitation circuit in the motor contactor or trigger a warning signal.

Colour: yellow



Stillstandsheizung

Bei besonderen Klimaverhältnissen z.B. bei starken Temperaturschwankungen oder bei stillstehenden Motoren in feuchter Atmosphäre kann eine Stillstandsheizung vorgesehen werden. Die Beschaltung des Heizelementes ist im Klemmkasten des Motors ersichtlich.

STOP **Achtung!** Während des Betriebes muß die Stillstandsheizung ausgeschaltet sein.

Anti-condensation heater

Under certain climatic conditions an anti- condensation heater may be required e.g. when there are great fluctuations in temperature or the motor is at rest in a humid atmosphere. For heater connection, see the motor terminal box.

STOP **Warning!** The anti-condensation heater must be switched off during normal operation.

Klemmenbezeichnung und Drehsinn

Ständerklemmen siehe Schaltbilder auf den Seite 12 und 13
L1, L2, L3 ... Phasenfolge des Netzes

Bei Anschluß entsprechend den nachstehenden Anschlußdiagrammen (Seite 12 und 13) ergibt sich Rechtslauf des Rotors. Ist dies nicht der Fall, dann sind zwei von den drei Zuleitungen des Anlaßgerätes oder Motors untereinander auszutauschen.

Anschluß

Für den Anschluß der Netzleitungen ist das Schaltbild im Klemmkasten und die Daten auf dem Motorleistungsschild zu beachten.
Bei Motoren mit Y/D Start sind alle Klemmbrettbrücken (Verbindungsbleche) am Klemmbrett zu entfernen und die sechs Klemmen am Anlaßgerät nach Schaltplan anzuschließen.
Bei Motoren mit Direktstart (Y od. D) sind die Klemmbrettbrücken am Klemmbrett entsprechend den nachfolgenden Anschlußdiagrammen auf den Seiten 12 und 13 am Motorklemmbrett zu legen.

Terminal markings and direction of rotation

For stator terminals, see circuit diagrams on pages 12 and 13
L1, L2, L3 .. Phase sequence in power supply

When connected as illustrated in the following diagrams (pages 12 and 13), the rotor will rotate clockwise. If this is not the case, please change two of the three leads to the starter or motor.

Connection

When connecting to the power supply, observe the diagram inside the terminal box and the data on the motor rating plate. In the case of motors with Y/D start, remove all terminal links on the board and connect the six terminals to the starter as indicated in the circuit diagram.
For direct start (Y or D) motors, connect the terminal links on the board as shown in the diagrams on pages 12 and 13 below.

DICHTUNGSRING — BEARING SEAL

Baugröße IEC size	Type WATT *type*	Antriebsseite WAR (B5-spezial) Getriebeanbaumotor *driving ends* *WAR (B5-special)* *gear motor*	Antriebsseite WAG, WAF B3/B5 *driving end* *WAG, WAF* *B3/B5*	Antriebsseite WAC B14 *driving end* *WAC* *B14*	Gegenantriebsseite *non driving end*	Gegenantriebsseite mit Bremse *non driving end with brake*
63	64	WDR 12x22x7	CD 12x17x4	WDR 12x22x7	CD 12x17x4	CD 12x17x4
71	72	WDR 15x26x7	CD 15x23x4	WDR 15x26x7	CD 15x23x4	CD 15x23x4
80	81	WDR 20x32x7	CD 20x30x4	WDR 20x32x7	CD 20x30x4	CD 20x30x4
90	91	WDR 25x40x7	CD 25x32x4	WDR 25x40x7	CD 25x32x4	CD 25x32x4
100	101	WDR 30x52x8	CD 30x36x5	WDR 30x47x7	CD 30x36x5	WDR 30x52x8
112	114	WDR 30x52x8	CD 30x36x5	WDR 30x47x7	CD 30x36x5	WDR 30x52x8
132	134	WDR 40x62x7	CD 40x47x5	WDR 40x62x7	CD 40x47x5	WDR 40x62x8
160	161	WDR 45x65x8	CD 45x52x5	—	CD 45x52x5	WDR 45x65x8
180	180	WDR 55x80x13	WDR 55x80x13	—	WDR 50x72x8	WDR 50x72x8
200	200	WDR 60x90x8	WDR 60x90x8	—	WDR 60x90x8	WDR 60x90x10
225	226	WDR 65x90x12	V-65S	—	V-65S	V-65S
250	251	—	V-75S	—	V-75S	—
280	281-2 pol.	—	V-80S	—	V-80S	—
	281-4,6,8 pol.	—	V-85S	—	V-85S	—
315	316-2 pol.	—	V-80S	—	V-80S	—
	316-4,6,8 pol.	—	V-95S	—	V-95S	—

WDR = Wellendichtung / *sealing* CD = CD-Ring / *CD-ring* V = V-Ring / *V-ring*

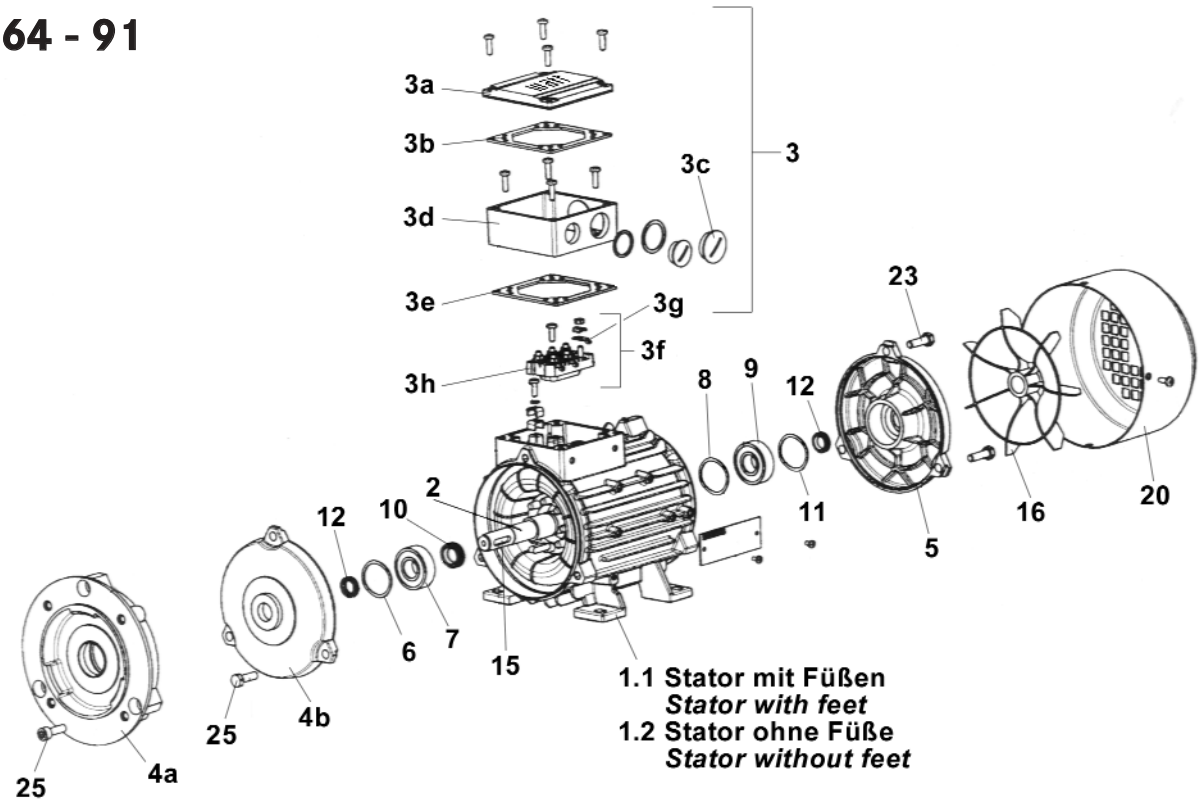
LAGER — BEARINGS

Baugröße IEC *size*	Type WATT *type*	Antriebsseite WAR (B5-spezial) Getriebeanbaumotor *driving ends* *WAR (B5-special)* *gear motor*	Antriebsseite WAG, WAF, WAC B3/B5/B14 *driving end* *WAG, WAF, WAC* *B3/B5/B14*	Gegenantriebsseite *non driving end*	Gegenantriebsseite mit Bremse *non driving end with brake*
63	64	6201	6201	6201	6201
71	72	6203	6202	6202	6202
80	81	6304	6204	6204	6204
90	91	6305	6205	6205	6205
100	101	6306	6206	6206	6206
112	114	6306	6306	6306	6306
132	134	6308	6308	6308	6308
160	161	6309	6309	6209	6209
180	180	6311	6311	6310	6310
200	200	6312	6312	6312	6312
225	226	6313	6313	6313	6313
250	251	—	6315	6315	—
280	281-2 pol.	—	6316	6316	—
	281-4,6,8 pol.	—	6317	6317	—
315	316-2 pol.	—	6316	6316	—
	316-4,6,8 pol.	—	6319	6319	—

Teile Nr. part No.	Bezeichnung designation	**WAF / WAR** B5 / V1 / V3								**WAG** B3 / B6 / B7 / V5 / V6							
	Baugröße IEC / size	63	71	80	90	100	112	132	160	63	71	80	90	100	112	132	160
	Type WATT / type	64	72	81	91	101	114	134	161	64	72	81	91	101	114	134	161
1.1	Stator B3 Stator B3									●	●	●	●	●	●	●	●
1.2	Stator B5, B14 Stator B5, B14	●	●	●	●	●	●	●	●								
2	Rotor + Welle Rotor + shaft	●	●	●	●	●	●	●		●	●	●	●	●	●	●	
3	Klemmkasten komplett Terminal box complete	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3a	Klemmkastendeckel Terminal box cover	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3b	Dichtung Klemmkastendeckel Seal terminal box cover	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3c	PG-Verschraubung PG-screwing	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3d	Klemmkastenrahmen Terminal box frame	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3e	Dichtung Klemmkastenrahmen Seal terminal box frame	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3f	Klemmbrett komplett Terminal board complete	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3g	Klemmbrettbrücke Terminal board bridge	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3h	Klemmbrett lose Terminal board	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
4a*)	Flanschlagerschild B5, B14 Flange end schild B5, B14	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
4b	Lagerschild A-Seite B3 End shield A-side B3									●	●	●	●	●	●	●	●
5	Lagerschild B-Seite End shield B-side	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
6	Kugellagerausgleichsscheibe Ball bearing shim	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
7	Lager Antriebsseite Bearing input side	siehe Tabelle auf der Seite 4 / see at table on page 4															
8***)	Sicherungsring,Lagerschild Lüfters. Circlip, end shield fan side	●	●	●	●				●	●	●	●	●				●
9	Lager Lüfterseite Bearing fan side	siehe Tabelle auf der Seite 4 / see at table on page 4															
10**)	Distanzring Threaded distance ring	●															
11	Sicherungsring, Welle Lüfterseite Circlip, shaft fan side	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
12	Wellendichtungen Shaft seals	siehe Tabelle auf der Seite 4 / see at table on page 4															
15	Paßfeder - Antriebsstummel Key - output	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
16	Lüfter Fan	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
20	Lüfterhaube Fan cover	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
21	Paßfeder - Lüfterflügel Key - fan blade								●								●
23	Schraube B-Seite Screw B-side	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
24	Motorfüsse motor feet													●	●	●	●
24a	Schrauben für Motorfüsse Screw for motor feet													●	●	●	●
25	Schraube A-Seite Screw A-side	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

*) B14 nur bis Baugröße 132 / B14 only up to size 132
**) nur bei Baureihe WAR / Only at serie WAR
***) nur bei der Baureihe WAR für die Typen 64, 71, 81, 91 / Only at WAR for the types 64, 71, 81, 91

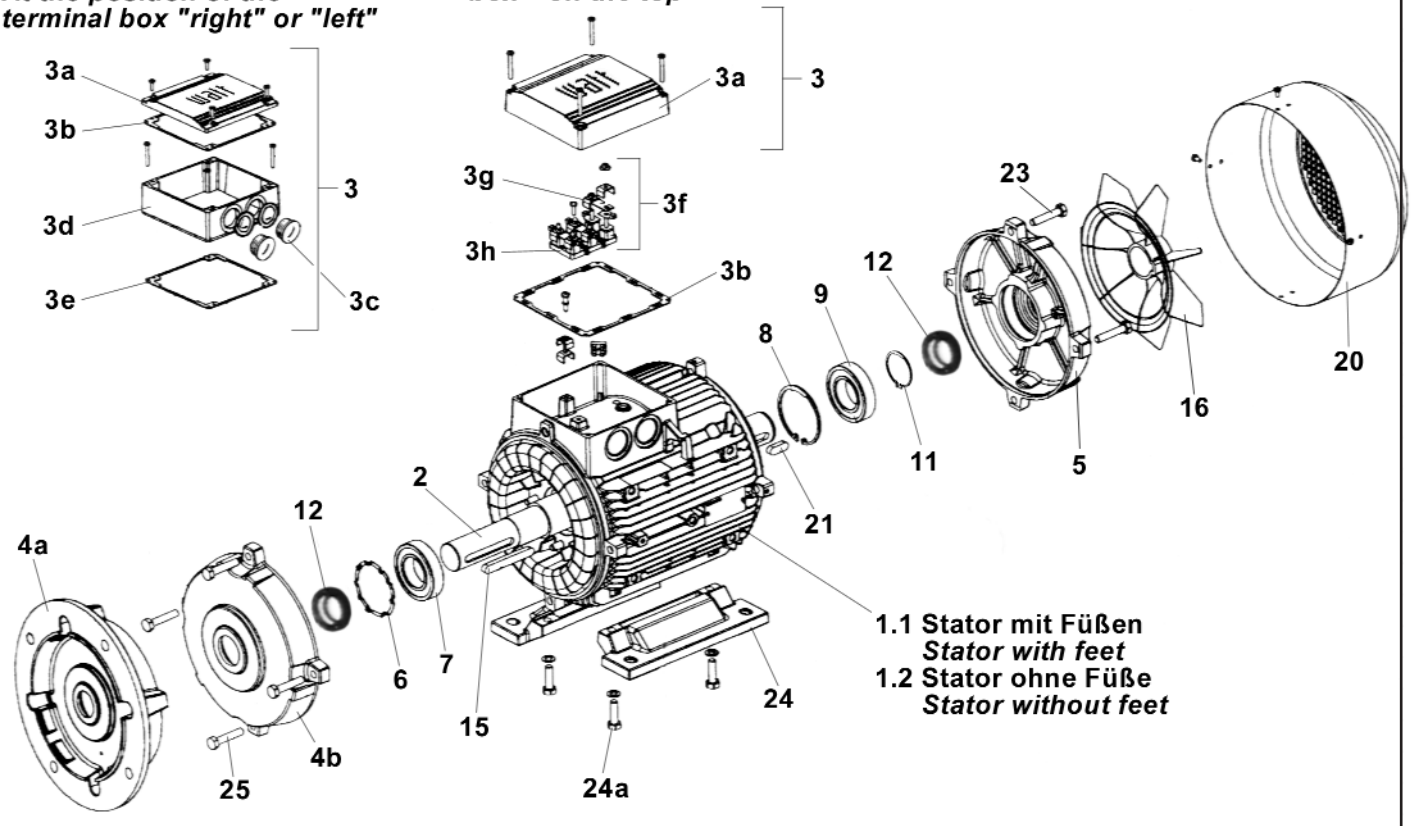
Type 64 - 91



Type 101-161

Bei Klemmkastenlage "rechts" oder "links"
At the position of the terminal box "right" or "left"

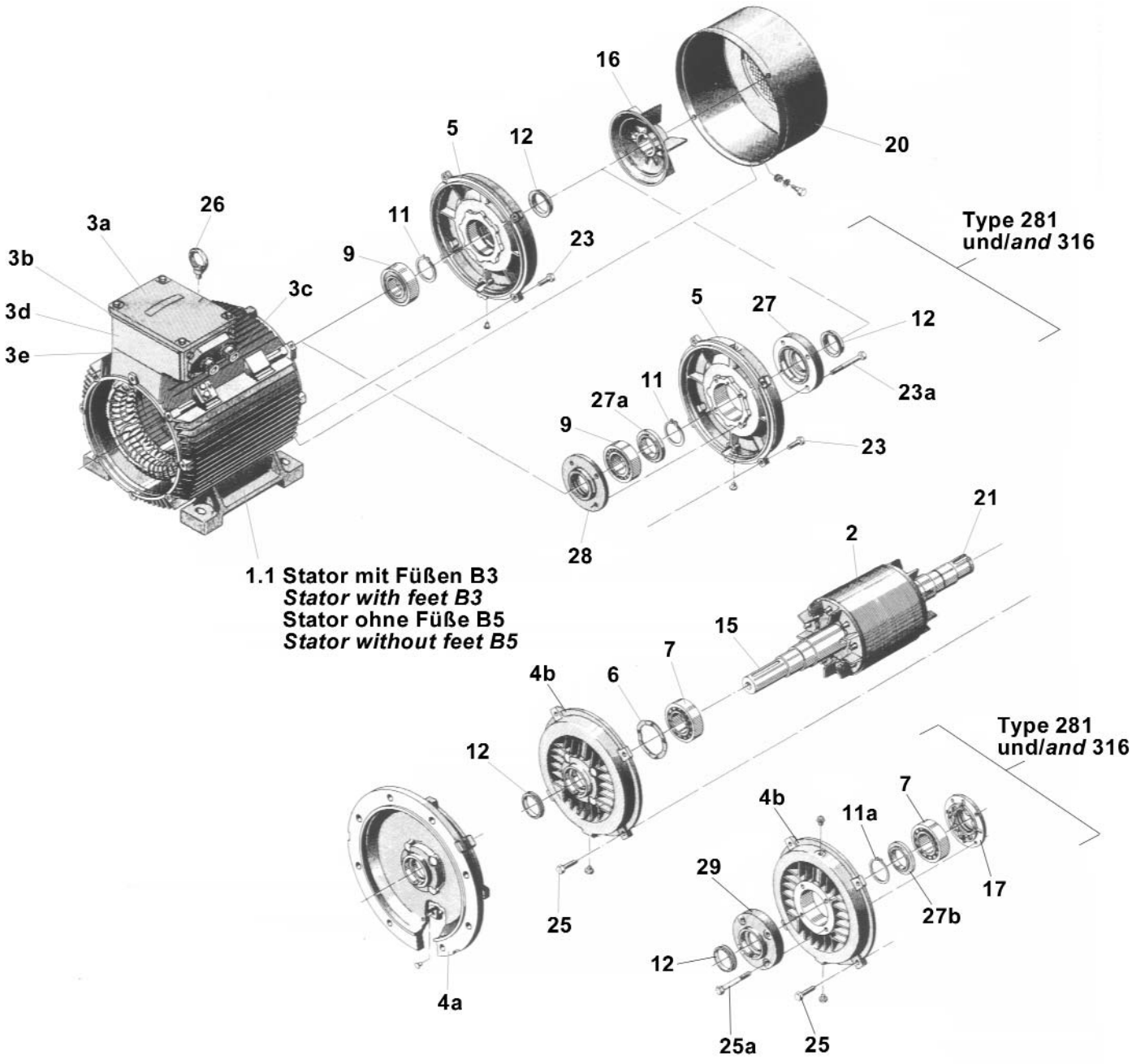
Bei Klemmkastenlage "oben"
At the position of the terminal box "on the top"



Teile Nr. / part No.	Bezeichnung / designation	**WAF / WAR***)** B5 / V1 / V3						**WAG** B3 / B6 / B7 / V5 / V6					
	Baugröße IEC / size	180	200	225	250	280	315	180	200	225	250	280	315
	Type WATT / type	180	200	226	251	281	316	180	200	226	251	281	316
1.1	Stator B3, B5 Stator B3, B5	Reparatur auf Anfrage / *repair on inquiry*											
2	Rotor + Welle Rotor + shaft												
3a	Klemmkastendeckel Terminal box cover	●	●	●	●	●	●	●	●	●	●	●	●
3b	Dichtung Klemmkastendeckel Seal terminal box cover	●	●	●	●	●	●	●	●	●	●	●	●
3c	PG-Verschraubung PG-screwing	●	●	●	●	●	●	●	●	●	●	●	●
3d	Klemmkastenrahmen Terminal box frame	●	●	●	●	●	●	●	●	●	●	●	●
3e	Dichtung Klemmkastenrahmen Seal terminal box frame	●	●	●	●	●	●	●	●	●	●	●	●
3f	Klemmbrett komplett Terminal board complete	●	●	●	●	●	●	●	●	●	●	●	●
3g	Klemmbrettbrücke Terminal board bridge	●	●	●	●	●	●	●	●	●	●	●	●
3h	Klemmbrett lose Terminal board	●	●	●	●	●	●	●	●	●	●	●	●
4a*)	Flanschlagerschild B5, B14 Flange end shield B5, B14	●	●	●	●	●	●						
4b	Lagerschild A-Seite B3 End shield A-side B3							●	●	●	●	●	●
4d	Außenlagerdeckel Antriebsseite Outer bearing cover inp. side	●	●									●	●
5	Lagerschild B-Seite End shield B-side	●	●	●	●	●	●	●	●	●	●	●	●
6	Kugellagerausgleichsscheibe Ball bearing shim	●	●					●	●				
7	Lager Antriebsseite Bearing input side	siehe Tabelle auf der Seite 4 / see at table on page 4											
9	Lager Lüfterseite Bearing fan side	siehe Tabelle auf der Seite 4 / see at table on page 4											
11	Sicherungsring, Welle Lüfterseite Circlip, shaft fan side	●	●	●	●	●	●	●	●	●	●	●	●
11a	Sicherungsring, Welle A-Seite Circlip, shaft A-side					●	●					●	●
12	Wellendichtungen Shaft seals	siehe Tabelle auf der Seite 4 / see at table on page 4											
15	Paßfeder - Antriebsstummel Key - output	●	●	●	●	●	●	●	●	●	●	●	●
16	Lüfter Fan	●	●	●	●	●	●	●	●	●	●	●	●
17**)	Innenlagerdeckel Antriebsseite Inside bearing cover inp. side	●	●			●	●	●	●			●	●
20	Lüfterhaube Fan cover	●	●	●	●	●	●	●	●	●	●	●	●
21	Paßfeder - Lüfterflügel Key - fan blade	●	●	●				●	●	●			
23	Schraube B-Seite Screw B-side	●	●	●	●	●	●	●	●	●	●	●	●
23a	Schraube Lagerdeckel B-Seite Screw bearing cover B-side	●	●	●		●	●	●	●	●		●	●
25	Schraube A-Seite Screw A-side	●	●	●	●	●	●	●	●	●	●	●	●
25a	Schraube Lagerdeckel A-Seite Screw bearing cover A-side	●	●			●	●	●	●			●	●
26	Tragöse Carrying ring	●	●	●	●	●	●	●	●	●	●	●	●
27	Außenlagerdeckel Lüfterseite Outer bearing cover fan side	●	●	●		●	●	●	●	●		●	●
27a	Außenring Lüfterseite Outer ring fan cover					●	●					●	●
27b	Außenring A-Seite Outer ring A-side					●	●					●	●
28	Innenlagerdeckel Lüfterseite Inside bearing cover fan cover	●	●			●	●	●	●			●	●
29**)	Außenlagerdeckel A-Seite Outer bearing cover A-side	●	●			●	●	●	●			●	●

*) nur bei der Baureihe WAR für die Typen 180, 200, 226 / Only at serie WAR for the types 180, 200, 226
**) nur bei der Baureihe WAF / Only at serie WAF
***) Baureihe WAR derzeit nur bei den Typen 180, 200, 226 / Serie WAR only for the types 180, 200, 226 at the moment

Type 180-316



ACHTUNG: **Bei Ersatzteilbestellung unbedingt Motornummer, Motortype und Getriebenummer angeben !**

ATTENTION: **With spare part orders always quote motor number, motor size and number of the gear unit !**

SCHUTZARTEN

Schutzart nach IEC Pub. 34 - 5, IEC 529 und DIN 40050

Die Schutzarten werden durch die Kennbuchstaben IP und zwei Kennziffern für den Schutzgrad angegeben.

Die erste Kennziffer gibt den Schutzgrad für Berührungs- und Fremdkörperschutz, die zweite Kennziffer den Schutzgrad für Wasserschutz an.

DEGREES OF PROTECTION

Degree of protection according to IEC Publ. 34 - 5, IEC Publ. 529 and DIN 40050

The designation to indicate the degrees of protection consists of the characteristic letters IP followed by two numerals.
The first numeral indicates the degree of protection against contact with live or moving parts and against ingress of solid foreign bodies.
The second numeral indicates the degree of protection against harm for ingress of water.

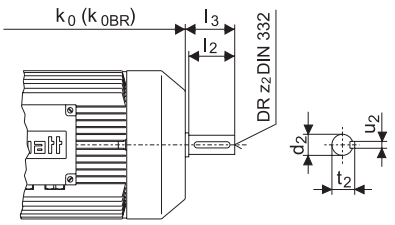
Vorzugsweise ausgeführte Schutzarten			**Preferred degrees of protection**	
Berührungs- und Fremdkörperschutz 1. Kennziffer	Wasserschutz 2. Kennziffer	Schutz-art / Degree of pro-tec-tion	Protection against contact and against ingress of solid foreign bodies First numeral	Protection against ingress of water Second numeral
Schutz gegen schädliche Staubablagerung	Schutz gegen Spritzwasser aus allen Richtungen	IP 54	Protected against harmful dust deposits	Protected against splashing water from all directions
Schutz gegen schädliche Staubablagerung	**Schutz gegen Strahlwasser aus allen Richtungen**	**IP 55**	**Protected against harmful dust deposits**	**Protected against water jets from all directions**
Schutz gegen Staubablagerungen im Inneren Schutz gegen Berührung mit Werkzeugen Ø > 1 mm	Schutz gegen starkes Strahlwasser aus allen Richtungen	IP 56	Protected against dust deposits in the interior Protected against contact with tools above 1 mm dia.	Protected against strong spray water from all directions
Schutz gegen Eindringen von Staub Schutz gegen Berührung mit Werkzeugen Ø > 1 mm	Schutz gegen Strahlwasser aus allen Richtungen	IP 65	Protected against entering of dust Protected against contact with tools above 1 mm dia.	Protected against spray water from all directions

Die Standardmotoren sind in Schutzart IP 55 ausgeführt.
Die Motoren sind für max. 95% Luftfeuchtigkeit bei 25°C ausgelegt.

The standard motors are protected in IP 55.
The motors are resistant against max. 95% air humidity at 25°C.

ZWEITES WELLENENDE
NORMALAUSFÜHRUNG
-ZW
BREMSAUSFÜHRUNG
-ZB

SECOND SHAFTEND
STANDARD
-ZW
BRAKE EXECUTION
-ZB

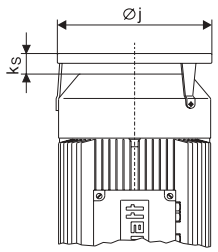


k0 ,k0BR siehe Maßblätter Seite 54 - 59.
k0 ,k0BR see dimension sheets page 54 - 59.

BAUGR. IEC size	TYPE WATT type	- ZW						- ZB					
		l3	d2	l2	t2	u2	z2	l3	d2	l2	t2	u2	z2
63	64	29,5	11	23	12,5	4	M4	27	11	23	12,5	4	M4
71	72	38	14	30	16	5	M5	35	14	30	16	5	M5
80	81	51,5	19	40	21,5	6	M6	35	14	30	15	5	M5
90	91	58	19	40	21,5	6	M6	45	19	40	21,5	6	M6
100	101	65,5	24	50	27	8	M8	55	24	50	27	8	M8
112	114	68	24	50	27	8	M8	56	24	50	27	8	M8
132	134	98	38	80	41	10	M12	66	28	60	31	8	M10
160	161	133	42	110	45	12	M16	87	38	80	41	10	M12
180	180	124,5	48	110	51,5	14	M16						
200	200	126	55	110	59	16	M20						
225	226	119	55	110	59	16	M20						
225M2	226M2	119	48	110	51,5	14	M16						

SCHUTZDACH FÜR
MOTOR VERTIKAL
NACH OBEN
-SD

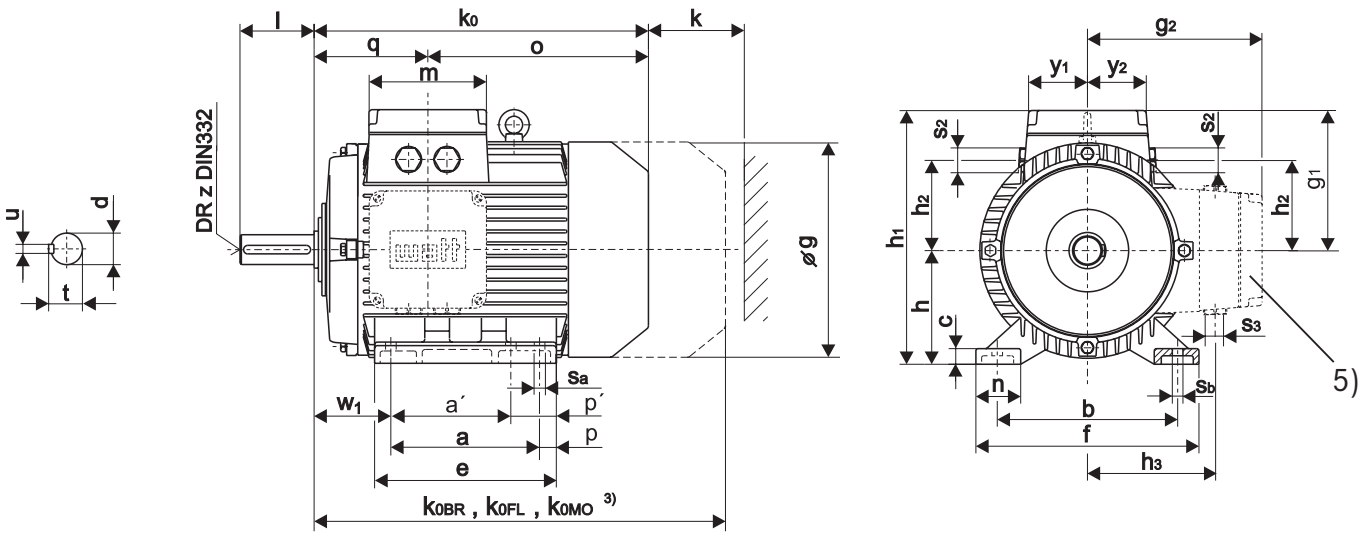
PROTECTIVE CAP
FOR MOTOR VERTICAL
AT THE TOP
-SD



BAUGR. IEC size	TYPE WATT type	ks	j
63	64	27	125
71	72	27	125
80	81	27	125
90	91	48	170
100	101	48	170
112	114	48	170
132	134	50	250
160	161	50	250
180	180	65	300
200	200	70	340
225	226	100	425

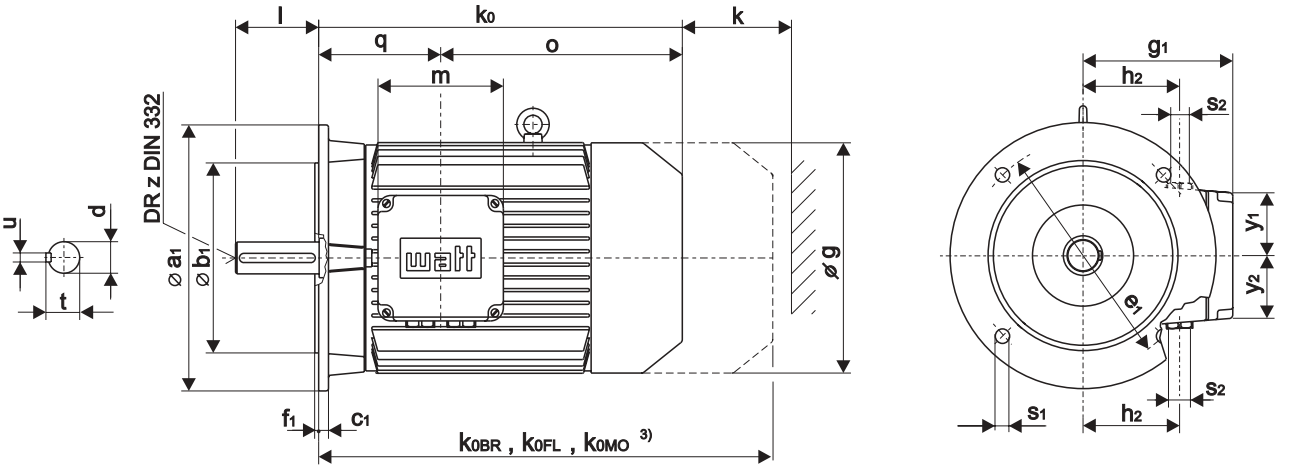
B3 (IEC-STANDARD 72-1 DIN 42673) TYPE WAG 101 - 200

Maße
Dimensions



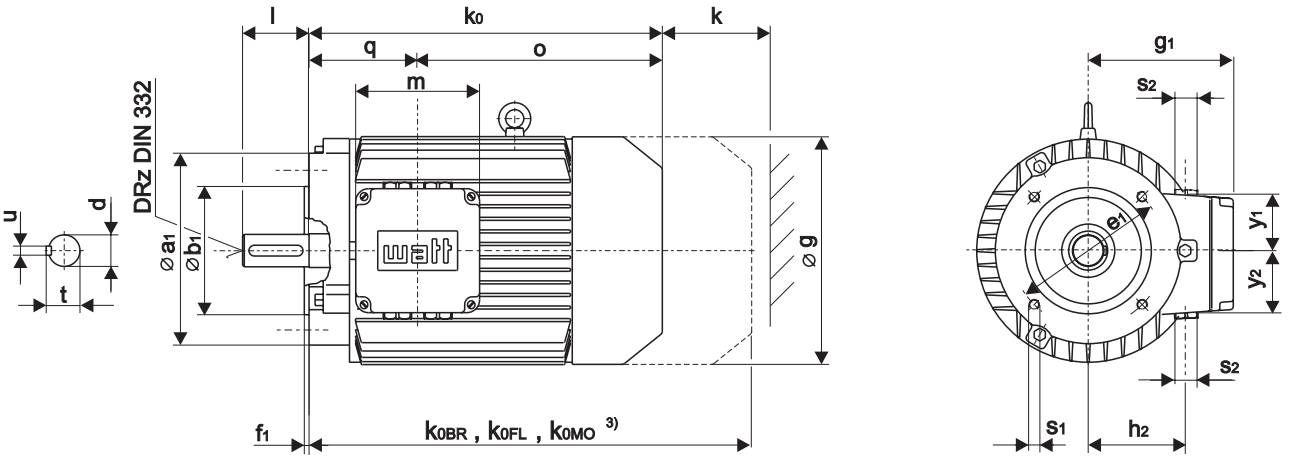
B5 (IEC-STANDARD 72-2 DIN 42677) TYPE WAF 101 - 200

Maße
Dimensions



B14 (IEC-STANDARD 72-2 DIN 42677) TYPE WAC 101 - 134

Maße
Dimensions



B3

Type	a	a´	b	c	e	f	g_2	h	h_1	h_3	n	p	p´	s_a	s_b	s_3	w_1
101L, LA	140	-	160	12	176	196	160	100	229	125	42	18	-	12	16	2xPG21	63
114M, M.	140	-	190	12	176	226	173	112	254	140	46	18	-	12	16	2xPG21	70
134S, SA	140	-	216	15	180	256	190	132	307	156	53	20	-	12	16	2xPG21	89
134M, M.	178	-	216	15	218	256	190	132	307	156	53	20	-	12	16	2xPG21	89
161M	210	-	254	18	256	300	223	160	357	184	60	23	-	15	19	2xPG21	108
161L	254	-	254	18	300	300	223	160	357	184	60	23	-	15	19	2xPG21	108
180M	241	-	279	22	285	342	269	180	449	218	66	22	-	15	15	2XPG29	121
180L	279	241	279	22	325	342	269	180	449	218	66	22	60	15	15	2XPG29	121
200L	305	-	318	28	385	392	306	200	506	248	80	40	-	19	19	2XPG36	133
200LA	305	-	318	28	385	392	306	200	506	248	80	40	-	19	19	2XPG36	133

B5							B14A						B14					
Type	a_1	b_1 [2]	c_1	e_1	f_1	s_1	a_1	b_1 [2]	e_1	f_1	g_1	s_1	a_1	b_1 [2]	e_1	f_1	g_1	s_1
101L, LA	250	180	11	215	4	14,5	160	110	130	3,5	129	M8	200	130	165	3,5	129	M10
114M, M.	250	180	11	215	4	14,5	160	110	130	3,5	142	M8	200	130	165	3,5	142	M10
134S, SA	300	230	12	265	4	14,5	200	130	165	3,5	175	M10	-	-	-	-	-	-
134M, M.	300	230	12	265	4	14,5	200	130	165	3,5	175	M10	-	-	-	-	-	-
161M	350	250	13	300	5	18,5	-	-	-	-	-	-	-	-	-	-	-	-
161L	350	250	13	300	5	18,5	-	-	-	-	-	-	-	-	-	-	-	-
180M	350	250	13	300	5	19	-	-	-	-	-	-	-	-	-	-	-	-
180L	350	250	13	300	5	19	-	-	-	-	-	-	-	-	-	-	-	-
200L	400	300	15	350	5	19	-	-	-	-	-	-	-	-	-	-	-	-
200LA	400	300	15	350	5	19	-	-	-	-	-	-	-	-	-	-	-	-

B3, B5 und / and B14														Wellenende / shaft end				
Type	g	g_1	h_2	k	k_0	k_{0BR} [3]	k_{0FL} [3]	k_{0MO} [3]	m	o	q	s_2 [4]	y_1	y_2	d [1]	l	t	u	z
101L, LA	196	129	78	39	312	390	431	486	120	210	102	2xPG21	60	60	28	60	31	8	M10
114M, M.	220	142	91	44	371	458	504	569	120	269	102	2xPG21	60	60	28	60	31	8	M10
134S,SA	259	164	107	50	416	522	557	627	140	287	129	2xPG21	70	70	38	80	41	10	M12
134M, M.	259	164	107	50	416	522	557	627	140	287	129	2xPG21	70	70	38	80	41	10	M12
161M	313	197	127	60	478	597	650	715	165	318	160	2xPG21	82,5	82,5	42	110	45	12	M16
161L	313	197	127	60	478	597	650	715	165	318	160	2xPG21	82,5	82,5	42	110	45	12	M16
180M	353	269	218	70	562	667	717	775	179	387	175	2xPG29	98,5	103,5	48	110	51,5	14	M16
180L	353	269	218	70	600	705	755	813	179	425	175	2xPG29	98,5	103,5	48	110	51,5	14	M16
200L	393	306	248	80	667	819	824	918	198	484	183	2xPG36	109	129	55	110	58,8	16	M20
200LA	393	306	248	80	667	819	824	918	198	484	183	2xPG36	112	158	55	110	58,8	16	M20

1) bis ∅ 48mm "k6" . . . über ∅ 50mm "m6" / up to ∅ 48mm "k6". . . over ∅ 50mm "m6"
2) bis ∅ 230mm "j6" . . . ab ∅ 250mm "h6" / up to ∅ 230mm "j6" . . . from ∅ 250mm "h6"
k_{0BR} . . . für Bremsmotoren / k_{0BR} . . . for brakemotors
3) k_{0BR} ... für Bremsmotoren bzw. Motormodule / for brake motors resp. motormodules
4) Bei den Typen 101 - 161 vorbereitet für PG mit Gegenmutter oder für metrische Anbauverschraubungen mit Gegenmutter siehe Tabelle Seite 55/ At types 101 - 161 prepared for PG with contra nut or for metrical connection screwing with contra nut see at table on page 55

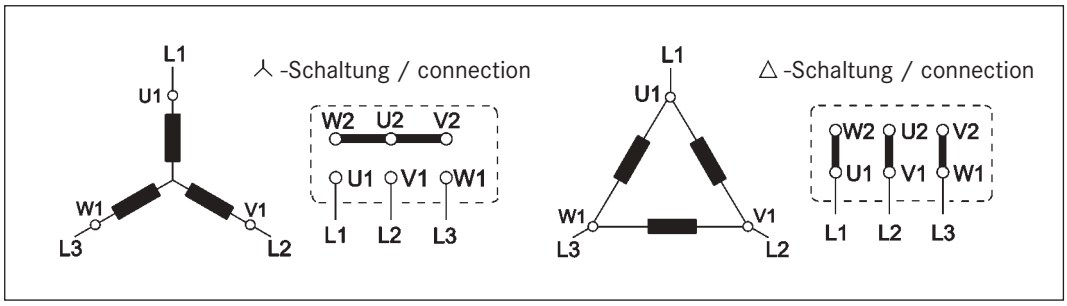
5) Bei den Motortypen 101, 114, 134 und 161 ist der Klemmkasten bei der Bauform B3 (WAG) in Standardausführung oben, die Klemmkastenlage " rechts" bei diesen Motortypen auf Anfrage.
Bei den Motortypen 180 und 200 ist der Klemmkasten bei der Bauform B3 (WAG) in Standardausführung rechts, Klemmkastenlage "oben" auf Anfrage.
At motortypes 101, 114, 134 and 161 the terminal box at the mounting position B3 (WAG) in standard execution is on top, the mounting position of the terminal box "right" at these motortypes on inquiry.
At motortypes 180 and 200 the terminal box at the mounting position B3 (WAG) in standard execution is right, mounting position of the terminal box "on top" on inquiry.

9. Schaltungsschema für Drehstrommotoren

9. Three phase motors connecting diagrams

9.1. Stern- und Dreieckschaltung für Motoren mit einer Drehzahl:

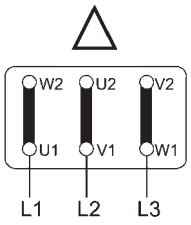
9.1. Star and delta connection for single speed motors:



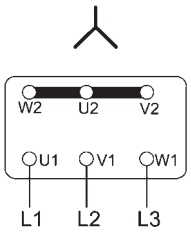
9.1.1. Klemmen - Anschluß für EUSAS - Motoren bis inkl. 2,2kW :

9.1.1. Terminal connections for EUSAS - motors up to 2.2kW

220-240V, 50Hz
220-280V, 60Hz
Dreieck Schaltung
Delta connection



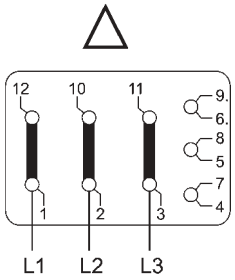
380-420V, 50Hz **Standard Schaltung, standard connection**
380-480V, 60Hz
Stern Schaltung
Star connection



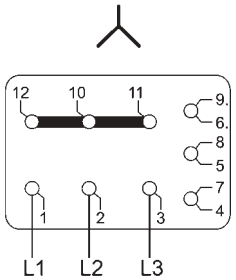
9.1.2. Klemmen - Anschluß für EUSAS - Motoren über 3kW : (bis Baugröße 160)

9.1.2. Terminal connections for EUSAS - motors over 3.0kW: (up to size 160)

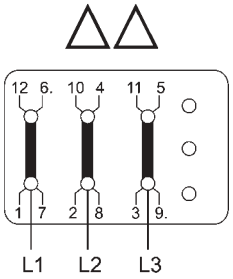
380-420V, 50Hz
380-480V, 60Hz
Dreieck Schaltung
Standard-Lieferung
Delta connection
Standard supply



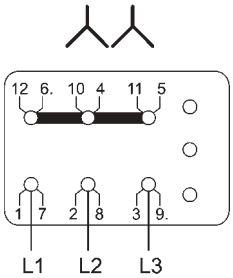
660 (-730V), 50Hz
660 (-830V), 60Hz
Stern Schaltung
Star connection



190-210V, 50Hz
190-240V, 60Hz
Dreieck/Dreieck Schaltung
Delta/delta connection



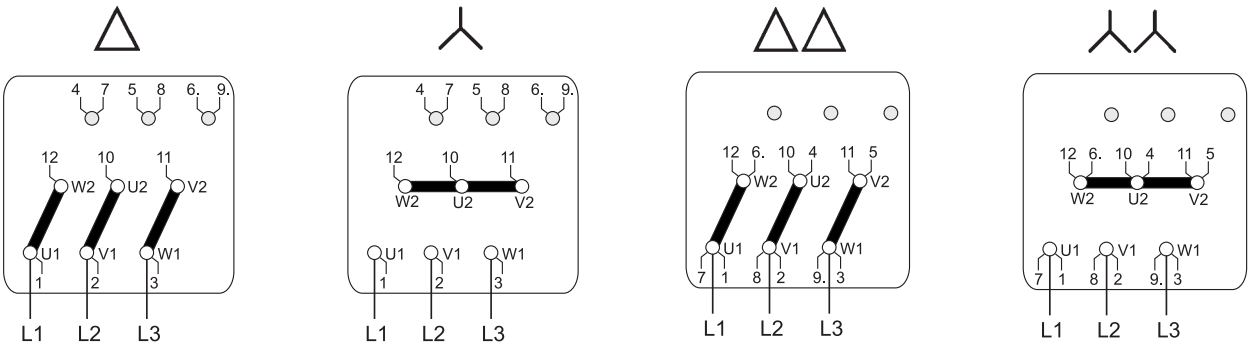
330-365V, 50Hz
330-415V, 60Hz
Stern/Stern Schaltung
Star/star connection



9.1.3. Klemmen - Anschluß für EUSAS - Motoren Baugröße 180 -225 :

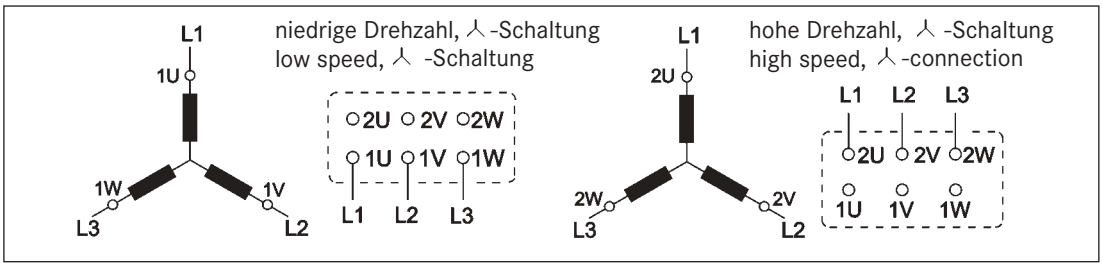
9.1.3. Terminal connections for EUSAS - motor sizes 180 - 225:

380-420V, 50Hz 380-480V, 60Hz	660 (-730V), 50Hz 660 (-830V), 60Hz	190-210V, 50Hz 190-240V, 60Hz	330-365V, 50Hz 330-415V, 60Hz
Dreieck Schaltung **Standard-Lieferung** Delta connection **Standard supply**	Stern Schaltung Star connection	Dreieck/Dreieck Schaltung Delta/delta connection	Stern/Stern Schaltung Star/star connection



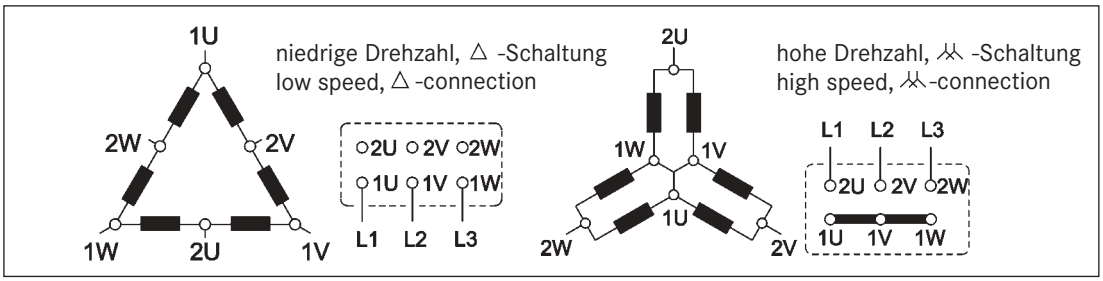
9.2. Schaltung für Motoren mit zwei Drehzahlen und zwei getrennten Wicklungen:

9.2. Circuit for two speed motors with two separate windings:



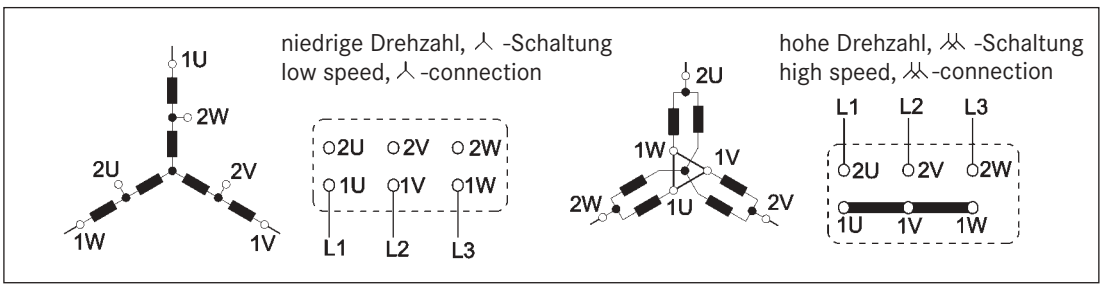
9.3. Dahlanderschaltung für Motoren mit zwei Drehzahlen und konstantem Drehmoment:

9.3. Dahlander circuit for two speed motors with constant torque:



9.4. Dahlanderschaltung für Motoren mit zwei Drehzahlen und quadratischem Drehmoment:

9.4. Dahlander circuit for two speed motors with square torque:



10. Technische Beschreibung - Bremsen

10.1. Wartung

Die WATT-Federdruckbremsen sind nahezu wartungsfrei.
Es ist zu empfehlen, den Luftspalt “a” in bestimmten Zeitabständen zu überprüfen, um ein sicheres Lüften der Bremse zu gewährleisten. Ein erforderliches Einstellen des Luftspaltes “a” kann nach Tabelle 1 erfolgen.

10.2. Einstellung

Die Bremsen sind bei der Lieferung auf das Nennmoment M_B eingestellt.

10. Technical specifications - brake

10.1. Maintenance

The WATT spring-loaded brakes hardly need any maintenance. However we recommend checking air gap "a" periodically to ensure safe brake release. Adjust air gap "a" to the figures given in table 1 below if necessary.

10.2. Adjustment

The brakes are set to torque MB on delivery M_B.

Tabelle 1 / **Table 1**

M_B	[Nm]	2	5	10	20	40	60	100	150	250	500
P_{20}	[W]	22	22	28	34	42	50	64	76	100	125
J_B	[kgm^2] x 10^{-3}	0,015	0,015	0,045	0,172	0,45	0,86	1,22	2,85	6,65	13,3
P_R	[J/s]	80	80	100	130	160	200	250	300	350	700
W_{Rmax}	[J] x 10^3	3	3	6	12	25	35	50	75	105	210
W_{RN}	[J] x 10^7	5	5	12	20	35	60	125	200	340	680
a_{normal}	[mm]	0,2	0,2	0,2	0,3	0,3	0,3	0,4	0,4	0,5	0,6
$a_{max.}$	[mm]	0,7	0,7	0,8	0,8	0,9	1,0	1,1	1,1	1,2	1,1
b_{min}	[mm]	4,5	4,5	5,5	7,5	9,5	11,5	12,5	14,5	16,5	16,5
Gewicht / weight	[kg]	1,0	1,0	1,9	3,1	4,6	6,3	10	14,7	21,5	28
t_1	[ms]	35	35	45	60	80	120	160	200	220	220
t_2 ≈	[ms]	70	70	95	140	175	210	280	350	500	500
t_2 =	[ms]	30	30	45	60	75	90	120	150	180	180

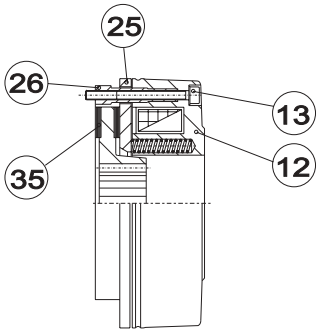
M_B	Bremsmoment	Braking torque
P_{20}	Leistung	Power
J_B	Massenträgheitsmoment Bremse	Brake mass moment of inertia
P_R	Wärmebelastung	Thermal load
W_{Rmax}	Reibarbeit je Schaltspiel	Friction per operating cycle
W_{RN}	Reibarbeit bis zum Nachstellen	Friction until readjustment
a_{normal}	Luftspalt	Air gap
$a_{max.}$	max. Nachstellung	Max. readjustment
b_{min}	Belagstärke min.	Min. lining thickness
t_1	Einschaltzeit	Make time
t_2 ≈	Ausschaltzeit	Break time A.C.
t_2 =	Ausschaltzeit	Break time D.C.

10.3. Nachstellung des Bremsluftspaltes

Zuerst werden die drei Befestigungsschrauben (13) eine halbe Umdrehung gelöst. Nun lassen sich die Hülsenschrauben (26) durch Drehen gegen den Uhrzeigersinn in den Magnetkörper (12) hineindrehen. Durch Drehen der drei Befestigungsschrauben (13) im Uhrzeigersinn läßt sich der Magnetkörper (12) in Richtung Ankerscheibe (25) so weit bewegen, bis der Nennluftspalt (Tabelle 1) errreicht ist. Jetzt werden die drei Hülsenschrauben wieder im Uhrzeigersinn bis zur festen Anlage aus dem Magnetkörper (12) herausgeschraubt und die Befestigungsschrauben (13) nachgezogen. Der Luftspalt muß jetzt noch auf Gleichmäßigkeit mit einer Fühlerlehre kontrolliert und gegebenenfalls korrigiert werden.

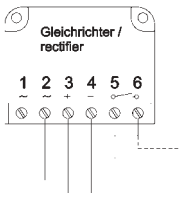
10.3. Readjusting the air gap

First undo the three fixing screws (13) a half turn. The sleeve screws (26) can then be inserted into the magnet body (12) by turning them anti-clockwise. By turning the three fixing screws (13) clockwise, the magnet body (12) can be moved towards the armature (25) until the nominal air gap (Table 1) is reached. Now undo the three sleeve screws again by turning them clokkwise out of the magnet body (12) and retighten the fixing screws (13). Check that the air gap is symmetrical with a feeler gauge and adjust if necessary.



11. Gleichrichter

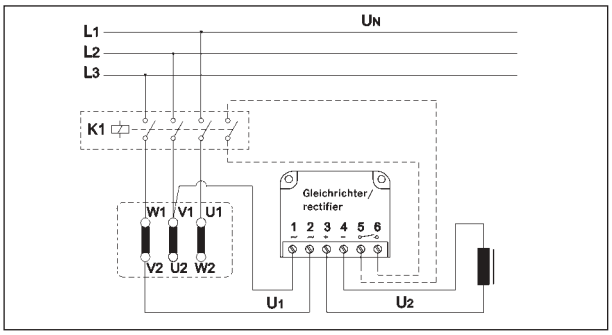
11.1. Einweggleichrichter



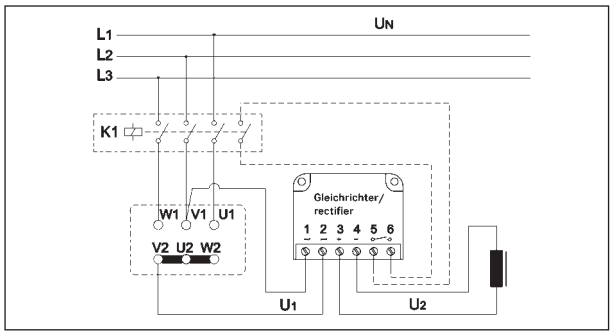
Anschlüsse:

1,2: Anschlußspannung (V~)
3,4: Ausgangsgleichspannung (V=)
5,6: Kontakt für gleichstromseitiges Schalten

Schaltbeispiel 1) für Motoren in Dreieckschaltung - "gleichstromseitiges Schalten"
Connection example 1) for motors in delta-connection - "switching in DC circuit"



Schaltbeispiel 2) für Motoren in Sternschaltung - "gleichstromseitiges Schalten"
Connection example 2) for motors in star-connection - "switching in DC circuit"



STROMVERSORGUNG

Die Gleichstrom-Bremsspule wird normalerweise über einen im Motor-Klemmkasten eingebauten Einweggleichrichter gespeist und ist für Spulenspannung 162-236 VDC, 85-133 VDC oder 24 VDC ohne Mehrpreis lieferbar (24V mit Blockklemme für externe Stromversorgung!). Entsprechende Gleichrichter- und Spulenspannungen sind gegen Mehrpreis für alle Sonderspannungen lieferbar. Zum Schutz gegen Überspannungen sind die Gleichrichter mit Varistoren beschaltet. Maximale Umgebungstemperatur +80°C. Bei Schalthäufigkeit über 1/s wegen Gleichrichter-Belastung rückfragen!

Einweggleichrichter (Normalausführung):

Der Anschluß des Bremssystems erfolgt über einen im Klemmenkasten eingebauten Gleichrichter entsprechend dem jeweils beigefügten Schaltbild.

Anschluß: Wechselspannung 100% z.B. 400 V~
Gleichspannung 45% z.B. 180 V=

STOP **Achtung! Bei Betrieb eines Bremsmotors mit Frequenzumrichter ist die Bremsspule an eine externe Spannungsversorgung anzuschließen.**

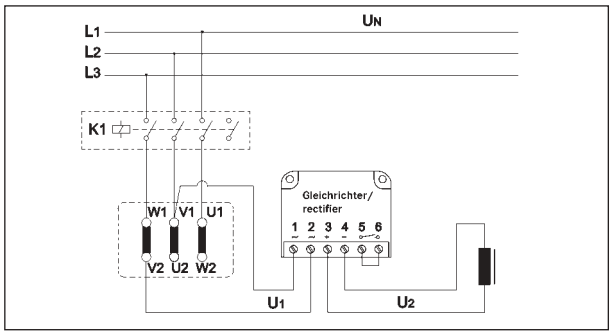
11. Rectifier

11.1. Half-wave rectifier

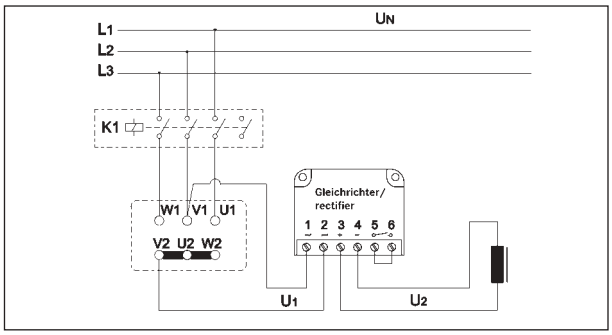
Connections:

1,2: Connection voltage (A.C. V~)
3,4: Output voltage (D.C. V=)
5,6: Connection for D.C.-side switching

Schaltbeispiel 1) für Motoren in Dreieckschaltung - "wechselstromseitiges Schalten"
Example 1) for delta connection motors - "switching in AC circuit"



Schaltbeispiel 2) für Motoren in Sternschaltung - "wechselstromseitiges Schalten"
Example 2) for star connection motors - "switching in AC circuit"



POWER SUPPLY

The DC brake coil is normally supplied with power from a half wave rectifier installed in the motor terminal box which is available for 162-236 VDC, 85-133 VDC or 24 VDC coil voltage at no extra charge (24V with block terminal for external power supply). Rectifiers and coils are available for all special voltages at extra cost. The rectifiers are equipped with varistors to protect them against overvoltage. Max. ambient temperature for rectifiers is +80°C. For starting frequency above 1/s, contact us for rectifier loading capacity!

Half-wave rectifier (standard version):

The braking system is connected with a rectifier installed in the terminal box in accordance with the enclosed circuit diagram.

Connection: a. c. voltage 100% e.g. 400 V a.c
d. c. voltage 45% z.B. 180 V d.c.

STOP **Warning! If a brake motor is operated with a frequency converter, connect the brake coil to an external power supply.**

EUROPE

Stammhaus
Headquarter

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